2016

The National Exercise Referral Framework

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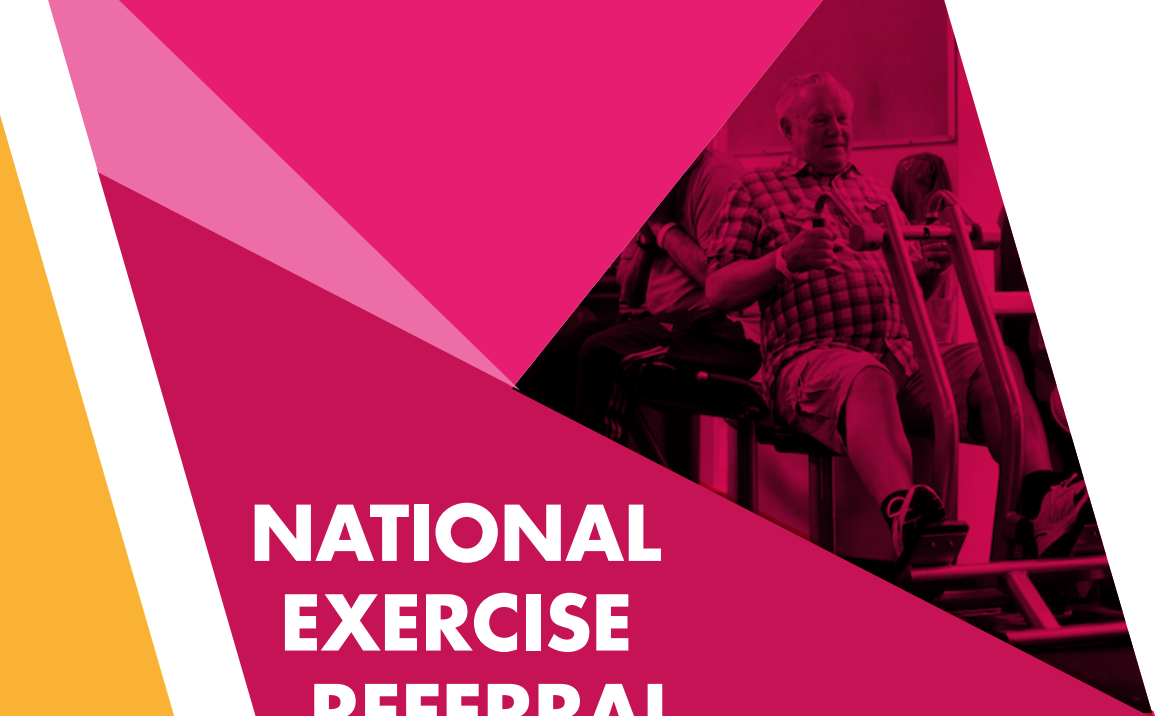
Recommended Citation

Woods C., McCaffrey N., & Furlong B. (2016). The National Exercise Referral Framework. Health and Wellbeing Division, Health Service Executive. Dublin. Ireland.

National Exercise Referral Framework



NATIONAL EXERCISE REFERRAL FRAMEWORK

DCU

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

hi Healthy Ireland

OÉ Gaillimh
NUI Galway

Waterford Institute of Technology

University of ULSTER

Foreword

The Healthy Ireland Survey 2015 identifies that 32% of the population are considered to be highly active with men more likely to be highly active (40%) than women (24%). This level of activity decreases with age with 46% of those aged 15-24 highly active compared to 15% of those aged 65 and over. International evidence demonstrates that increased levels of physical activity play an important role in attaining a 20-40% relative reduction in risk of all-cause mortality and premature mortality from cardiovascular diseases, colon cancer, breast cancer, and depression. It also plays an essential role in halting the rise in diabetes and obesity. Guidelines on Physical Activity for Ireland recommend that adults should achieve at least 30 minutes moderate activity on 5 days a week (or 150 minutes a week). Studies have shown that the majority of adults do not achieve this level of activity.

In seeking to address the increasing prevalence of chronic disease, the World Health Organisation is developing a European Physical Activity for Health Strategy; its purpose is to inspire governments and stakeholders to work towards increasing levels of physical activity among all citizens of the European region. Furthermore, in early 2016 Ireland launched it's first National Physical Activity Plan with a clear vision to make Ireland a more active place to live.

A 2013 Review of the HSE funded GP Exercise Referral Programme (GPERP) highlighted the need for a new National Exercise Referral Framework (NERF). The evidence suggests that exercise referral is an effective targeted health intervention for specific patients and with the increasing prevalence of chronic disease it is imperative that we examine, design and progress the implementation of scalable, sustainable evidence-based, interventions, integrated across the health system to improve the health and wellbeing of the population.

The development of this proposed National Exercise Referral Framework, commissioned by Health Promotion and Improvement, was led by DCU involving a multi-disciplinary Working Group and supported by a HSE Cross-Divisional Group. We are grateful to the Working Group and in particular to Dr Catherine Woods and the team in DCU for their extensive work and commitment to this project.

There are a number of practical steps now required to determine the feasibility of the proposed framework as a national model namely, identification of a sustainable funding model; design and development of chronic disease care pathways and a phased implementation plan that would build on the existing programmes. The Health & Wellbeing Division of the HSE will lead the next phase of this project.

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Health & Wellbeing Division
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National Exercise Referral Framework Health Service Executive Cross Divisional Steering Group

Member	Position
Ms. Biddy O'Neill	Chair, Health Service Executive
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Dr. Orlaith O'Reilly	National Clinical Advisor & Group Programme Lead, Health & Wellbeing Division
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Please cite this report as: Woods C., McCaffrey N., Furlong B., Fitzsimons-D'Arcy L., Murphy M., Harrison M., Glynn L., O'Riordan J., O'Neill B., Jennings S. and Peppard C. (2016) The National Exercise Referral Framework. Health and Wellbeing Division, Health Services Executive. Dublin. Ireland.

Acknowledgements

It would not have been possible to bring this work to completion without the valuable input and contribution of a number of parties. Firstly, we would like to acknowledge the HSE for commissioning this work and providing the resources necessary to undertake this project. Secondly, we would like to extend our sincere gratitude to the panel of international experts who accepted the invitation to speak at the Expert Symposium held in Dublin and gave their time for consultation with the Working Group. The experts included:

Prof. Fiona Bull	Director, Centre for the Built Environment and Health, School of Population Health at the University of Western Australia
Mr. Malcolm Ward	Principal Health Promotion Specialist, Public Health Wales
Ms. Kim Buxton	Assistant Director, Primary Care Project Manager, British Heart Foundation National Centre for Physical Activity and Health
Dr. Minna Aittasalo	Senior Researcher, UKK Institute for Health Promotion Research, Finland
Dr. Brian Martin	Head of the Physical Activity and Health Unit, Institute of Social and Preventive Medicine of the University of Zurich

The NERF advisory panel, consisting of 56 representatives from both the health and non-health sector in Ireland, contributed substantially to the shaping of the NERF through consultation at all stages of development (Appendix A).

The contribution of the expert business advisory group in the development of a business model for the NERF is greatly appreciated. The group included:

Laura Clifford	Commericialisation Support Officer, Research & Enterprise Hubs, DCU
Ken Robinson	CEO, DCU Sport
Prof. Anthony Staines	Chair of Health Systems, School of Nursing and Human Sciences, DCU
Prof. Regina Connolly	Director of MSc in Electronic Commerce degree programme at DCU Business School

Finally, the NERF patient inclusion criteria was developed in consultation with specialists in various medical specialities (Appendix B). This contribution is valued and acknowledged.

Photographs by Patrick Bolger

Table of Contents

Abbreviations

ACLS	Advanced cardiac life support
AED	Automated external defibrillator
BMI	Body mass index
BP	Blood pressure
COPD	Chronic obstructive pulmonary disease
CPD	Continuing professional development
CVD	Cardiovascular disease
EHFA	European Health and Fitness Association
EQF	European Qualifications Framework
ERS	Exercise Referral Scheme
ERU	Exercise Referral Unit
FSEM	Faculty of Sports and Exercise Medicine
GP	General Practitioner
GPERP	General Practitioner Exercise Referral Programme
HIQA	Health Information and Quality Authority
HSE	Health Service Executive
ICGP	Irish College of General Practitioners
ICP	Integrated care pathways
INDI	Irish Nutrition and Dietetic Institute
IPNA	Irish Practice Nurses Association
ISCP	Irish Society of Chartered Physiotherapists
LSP	Local Sports Partnership
MOU	Memorandum of Understanding
NERF	National Exercise Referral Framework
NCD	Non-communicable disease
NFQ	National Framework of Qualifications
NICE	National Institute for Health and Care Excellence
PA	Physical activity
PAPHM	Physical Activity Pathway Healthcare Model
RCPI	Royal College of Physicians Ireland
RCSI	Royal College of Surgeons Ireland
REPs	Register of Exercise Professionals
WHO	World Health Organization

Executive Summary

The World Health Organisation published a European Physical Activity for Health Strategy in 2015; its purpose is to inspire governments and stakeholders to work towards increasing levels of physical activity among all citizens of the European region. The vision of Ireland's first National Physical Activity Plan, published in early 2016, is to make Ireland a more active place to live. Both documents provide a timely context for the development and publication of Ireland's National Exercise Referral Framework (NERF).

NERF's vision is that those living with NCDs or mental illness will enjoy more active and healthier lives.

Both documents emphasize the importance of embedding physical activity promotion within the healthcare setting and each identifies this action as a priority area particularly in addressing the prevention and control on non-communicable diseases (NCDs). This emphasis is underpinned by high quality evidence supporting the use of physical activity for health promotion and primary and secondary prevention of several chronic conditions. A summary of this evidence is provided in section 2. This demonstrates that increased levels of physical activity play an important role in attaining a 20-40% relative reduction in risk of all-cause mortality and premature mortality from cardiovascular diseases, colon cancer, breast cancer, depression and dementia. It also plays an essential role in halting the rise in diabetes and obesity.

Doctors and other healthcare professionals are important influencers of patient behaviour and key initiators of NCD prevention actions within the healthcare system. As such, they can influence large proportions of the population. The NERF recognises this role, and advocates for the inclusion of physical activity as an explicit element of regular behavioural risk factor screening for NCD prevention, patient education and referral. Evidence supports the effectiveness of brief advice and brief intervention by healthcare professionals to increase physical activity levels among the general population, and in particular inactive adults [1]. Evidence suggests that exercise referral is an effective targeted health intervention for specific patients [2], but it has limited evidence as an effective intervention for the general population [3]. In order to outline the architecture for the adoption of the exercise referral approach, the NERF adopts Physical Activity Pathways in Healthcare Model (Figure 1), adpated from the physical activity care pathway model [4,5]. A detailed description of this model and its application within the Irish healthcare system, along with evidence of factors that are associated with effective exercise referral schemes are explained in section 2.

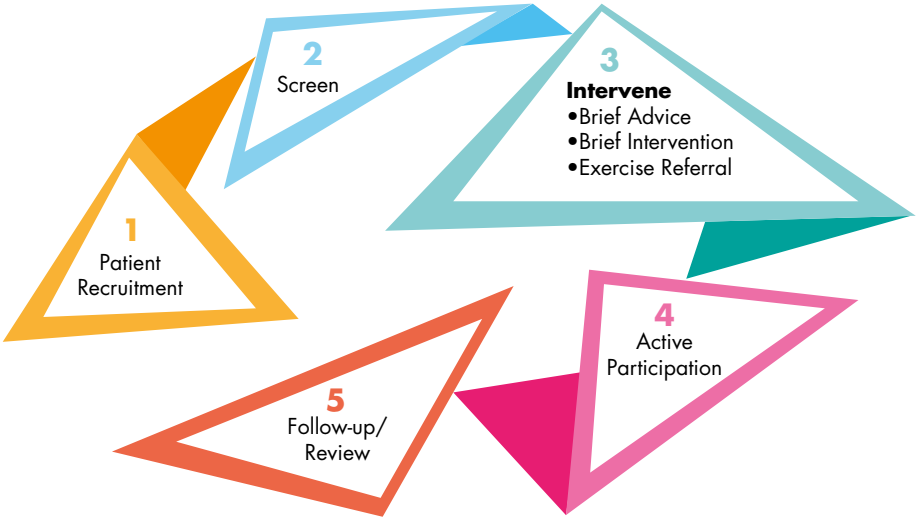

Figure 1: The Physical Activity Pathways in Healthcare Model (PAPHM)

The NERF development is addressed in section 3, and section 4 explains its vision and principles. The aim of NERF is to increase physical activity levels and improve health in individuals living with an established NCD or mental illness. Its objectives are i) to outline referral pathways to quality, safe and effective supervised physical activity opportunities for individuals living with an established NCD or mental illness; ii) to develop the knowledge, attitude and skills of health professionals and physical activity service providers in relation to physical activity and its role for the primary and secondary prevention of NCDs, and iii) to describe an appropriate evaluation framework for the NERF.

The key stakeholders in NERF are outlined in section 5. There are four categories of stakeholders in NERF. These include the establishment of an Exercise Referral Unit, which would be responsible for governance and management of the NERF, but it will also provide support for both referring practitioners and service providers. The participants who can avail of the NERF are adults with an established NCD or mental illness. NERF participants are categorized in category A, those who require high levels of supervision and make up about 5-10% of the target population, and category B, those who require medium levels of supervision approximately 90%-95% of the target group. The referring practitioners are all appropriately trained healthcare professionals from both primary and secondary care in both acute and community settings. The service providers are all appropriately trained physical activity professionals from both facility based (e.g. leisure centers) and community located (e.g. local community or primary care centers) settings. Within this section the potential demand for exercise referral by participants with established NCDs is reviewed, the competency and training requirements for both referring practitioners and service providers is detailed.

The participant pathways are explained in section 6. Guided by the Physical Activity Pathways in Healthcare Model, the journey of the participant through each of the five stages -recruitment, screening, intervention, active participation and review – is explained in detail. This section covers both the infrastructural and personnel requirements to run the NERF, to integrate it within other healthcare pathways and to provide a high quality service for active participation in physical activity to all NERF participants.

The importance of continual monitoring and systematic evaluation of NERF is emphasized. However, NERF also recommends that any evaluation must be participant centered in order to ensure that the reasons for data collection are understood by the participants. Section 7 provides detail on the NERF evaluation framework. This comprises process and outcome evaluation measures. Information on both a minimal and an optimal data set is provided in terms of i) the rationale for each measure, ii) the time point at which each measure should be taken, iii) the measures to be used, iv) the recommended method for measurement and v) the personnel responsible for carrying out each assessment method.

A business model for NERF is provided in section 8. This details the value proposition for NERF and proposes a hybrid business model is adopted. A hybrid aligns both 'health of the nation' concepts and 'commercial expectations' in relation to the quality of service provided to participants by both healthcare professionals and service providers, and the efficiencies in operation within the NERF.

In order to facilitate the establishment of the NERF the **following action points** for the HSE and the Exercise Referral Unit are identified:

Health Services Executive Action Points

- Adopt the NERF as the national framework
- Identify a source of funding for the NERF
- Appoint the NERF National Manager
- Establish the NERF Exercise Referral Unit
- Facilitate the integration of a NERF electronic referral system with Healthlink

Exercise Referral Unit Action Points

- Oversee the development, review, and delivery of training for service providers and referring practitioners
- Recruit referring practitioners and service providers
- Assist primary care centres and academic institutions to establish NERF centres
- Adapt existing evidence-based/informed self-directed programmes
- Compile and distribute NERF packs for referring practitioners and service providers
- Use the business model to advance the business case for the NERF

This document concludes with **recommendations for the future development** of NERF. These recommendations include placing the NERF within the Physical Activity Pathways in Healthcare model and using Brief Advice, Brief Intervention; and conceptualizing of physical activity or exercise as a Vital Sign, similar to blood pressure, for all healthcare professionals. Other recommendations include expanding the NERF for the inclusion of children, tacking sedentary behaviour more efficiently, developing our use of mobile technologies to support remote supervision of participants, required pre-service training for all healthcare professionals in relation to exercise referral, development of self-initiation of referral pathway for participants and delivery on regular public awareness, education and communication campaigns.

The NERF outlines a multi-disciplinary, multi-sectoral approach to increasing physical activity levels and consequently improving the health in individuals living with an established NCD or mental illness. In this way, healthcare professionals, service providers and the participants themselves can work together to fully realize Healthy Ireland's potential to **make Ireland a more active place to live.**

Let's Get Ireland Active!

Section 1:

Background

Introduction

A recent review (2013) of the Health Service Executive (HSE) funded GP exercise referral programme (GPERP) highlighted the need for a new National Exercise Referral Framework (NERF). The development of NERF was overseen by a Working Group based in Dublin City University with representation from key partners and a Cross Divisional Group within the HSE. The purpose of this document is to present i) the international and national context, ii) a summary of the literature on physical activity and health, iii) a model of best practice for the inclusion of Physical Activity Pathways in healthcare settings as part of routine and integrated care, and iv) NERF: A detailed framework outlining the management; target population; roles and responsibilities, competencies and training, infrastructure and resource requirements of the referring practitioners and physical activity service providers; evaluation framework; and business model.

The Context

Internationally, physical activity's role in the prevention and control of non-communicable diseases (NCDs) is recognised by the Council of the European Union (2013) [6], the World Health Assembly (2004, 2008) [7,8] and the United Nations General Assembly (2011) [9]. Strategic and policy documents including Health 2020: the European Policy for Health and Wellbeing [10], the Vienna Declaration on Nutrition and NCDs (2013) [11], and the European Physical Activity Strategy (in development) all advocate for EU member states to have clear, consistent physical activity policies that require physical activity targets, with appropriate strategies and monitoring systems to address a 25% reduction in premature mortality from NCDs and a 10% reduction in physical inactivity (those not meeting physical activity guidelines) by 2025. Ireland, as a member state of the EU, has signed up to these targets [12].

Nationally, Healthy Ireland has published the National Physical Activity Plan [13]. Healthy Ireland endorses a life course approach to health as an integrated continuum rather than disconnected and unrelated stages. This is supported by other Government strategies, policies, and frameworks including Get Active: Physical Education, Physical Activity and Sport for Children and Young People: A Guiding Framework [14]; Better Outcomes, Brighter Futures: The national policy framework for children and young people [15]; Smarter Travel: A Sustainable Transport Future [16]; and the National Positive Aging Strategy [17]. The National Positive Ageing Strategy (2013) identified the achievement of lifelong good health, with an increased disability-free life expectancy for the population. Physical activity has a role to play in achieving this objective. Healthy Ireland advocates for delivery of physical activity pathways within the healthcare setting.

The Health Service Executive (HSE) previously operated a general practitioner exercise referral programme (GPERP) to support individuals to become more physically active, providing a pathway to the prevention and management of chronic disease. Patients were referred by their GP to a 12-week exercise programme run by qualified local coordinators who have completed the HSE National Training Course. A recent review (2013) of the programme identified both significant strengths and weaknesses. Strengths of the programme included the multi-disciplinary nature of the steering group, the partnership approach, the highly trained and motivated local co-ordinators, and the programme promotional materials. Weaknesses were both strategic and operational. Strategic weaknesses included the lack of an evidence-base underpinning a national programme, the lack of importance placed on the role of physical activity within the healthcare sector, the lack of evaluation of the programme, and the lack of a financial model to ensure financial viability. All of these factors ultimately contributed to a lack of buy-in by key partners. Operational weaknesses included insufficient resources and support, uneven national roll-out, inappropriate referrals, high staff turnover within the leisure sector, and training programme difficulties. Ultimately, the review concluded that there was a need to redevelop the national exercise referral programme. The review included a number of opportunities and suggestions for future development. These involved the broadening of the programme to encompass referrals from more health professionals and to a broader range of physical activities options; enhancing the role of local sports partnerships (LSPs), voluntary health advocacy bodies, and public leisure centers; mainstreaming of a tiered training programme for exercise professionals; introduction of health professional training; inclusion of participants with chronic conditions; transferring the programme to clinical care; and costing in line with the individual's ability to pay.

Section 2:

Summary of Literature

Physical Activity and Health: The Evidence

Physical activity has both health promoting and disease prevention properties. Regular physical activity can substantially increase the disability-free lifespan[18]. It enhances wellbeing, physical and mental health, prevents disease, and provides economic benefits to both the individual and the state. It contributes to environmental sustainability, and improves social connectedness and quality of life [19].

There is irrefutable evidence of the beneficial effects of regular physical activity in both the primary and secondary prevention of several chronic conditions and premature death. Since the seminal work of Morris in the 1950s [20] and the early work of Paffenbarger and colleagues in the 1970s [21,22], numerous long-term prospective trials have determined the relative risk of death from all cause and from specific diseases associated with physical inactivity [23–26]. Increased levels of physical activity in both men and women is associated with a decreased relative risk of all-cause mortality of 20-35% [23,27]. Even small improvements in physical activity or physical fitness are associated with a significant reduction in risk. For example, an increase in energy expenditure due to physical activity of ~1000 kcal per week or an increase in physical fitness of 1 metabolic equivalent (MET) is associated with reducing all-cause mortality by ~20% [28].

A clear causal relationship exists between the amount of physical activity people do and all-cause mortality [29]. Adults achieving the current World Health Organisation (WHO) physical activity guidelines (≥150 minutes of moderate-intensity or ≥75 min of vigorous-intensity aerobic physical activity throughout the week) gain considerable reduction in risk of over 20 chronic conditions [30], for example up to 35% risk reduction for cardiovascular disease (CVD), 40% for diabetes, and up to 30% for depression (Table 1). Interestingly for CVD, individuals who are physically fit yet have other risk factors appear to be at lower risk of premature death than people who are physically inactive with no risk factors [31]. Independent of physical activity, sedentary behaviour (i.e. activities that do not increase energy expenditure substantially above the resting level such as sitting) has also been associated with the prevalence of overweight and obesity, all-cause mortality, type 2 diabetes, metabolic dysfunction, and some types of cancer [32].

Table 1: Risk reduction amongst adults for specific chronic diseases as a result of meeting the WHO recommendations for physical activity [29]

Chronic condition	Risk reduction
All-cause mortality	20-35%
Cardiovascular disease	20-35%
Diabetes	30-40%
Hip fractures	36-68%
Colon cancer	30%
Breast cancer	30%
Depression/dementia	20-30%
Loss of function	20%

The benefits of physical activity are evident, not only in healthy individuals but also in those with established chronic illness. Observational and randomized trials have demonstrated that regular physical activity is beneficial in the treatment of numerous chronic diseases, including CVD (coronary artery disease, chronic heart failure, peripheral arterial disease, and hypertension) [33–36]; pulmonary disease [37]; metabolic disorders (type 2 diabetes, dyslipidemia, obesity) [38–40]; muscle, bone, and joint diseases (osteoarthritis, rheumatoid arthritis, osteoporosis, fibromyalgia) [41–44]; cancer [45]; and depression [46].

Physical activity can act either as an alternative to drug or conventional treatment or as a supplement. Physical activity is not associated with the side effects of drugs and provides additional physical, mental, and social benefits [47]. Physical activity is protective against depressive symptoms/distress in older adults irrespective of their level of chronic pain [48].

Despite these irrefutable benefits, a third of adults globally do not reach public health guidelines for recommended levels of physical activity [49]. Ireland is comparably worse than the global picture, with recent surveillance data suggesting that two thirds of the adult population in Ireland are physically inactive [50]. Physical inactivity is the fourth leading risk factor for mortality worldwide, behind high blood pressure, tobacco use, and high blood glucose, and ahead of such risk factors as overweight and obesity and high cholesterol [51]. Physical inactivity accounts for approximately 5.3 million (9%) deaths globally per year and it is estimated that if physical inactivity was reduced by 10% or 25%, more than 533,000 and 1.3 million deaths, respectively, could be averted annually [52]. Physical inactivity is accountable for 6-10% of NCDs globally [52], ~21–25% of the breast and colon cancer burden, ~27% of diabetes and ~30% of the ischaemic heart disease burden [53].

In Ireland, the NCDs; CVD, cancer, chronic obstructive pulmonary disease (COPD), and diabetes account for 76% of all deaths [54]. The all-cause mortality rate associated with physical inactivity is estimated at 14.2% [52]. If physical inactivity were absent, it is estimated that the occurrence of new coronary heart disease cases would reduce by 8.8%, new diabetes cases by 10.9%, breast cancer by 15.2%, and colon cancer by 15.7% [52]. The life expectancy of the Irish population would be estimated to increase by 0.87 years if physical inactivity was eliminated [52].

Physical Activity Pathways in Health: A model of best practice

The Toronto Charter for Physical Activity (2010) [19] outlines the direct health benefits and co-benefits of investing in policies and programmes to increase levels of physical activity. Consistent with the WHO's Global Strategy for Diet and Physical Activity [7], the Charter in extensive consultation with world-wide stakeholders makes a strong case for increased action and greater investment in physical activity as part of a comprehensive approach to the prevention of NCDs. One of its globally recognised 'best investments' for physical activity is:

"The integration of physical activity and NCD prevention into the primary healthcare systems" [55]

Embedding physical activity in the healthcare setting

Doctors and health care professionals are important influencers of patient behaviour and key initiators of NCD prevention actions within the healthcare system. As such, they can influence large proportions of the population. Healthcare systems should include physical activity as an explicit element of regular behavioural risk factor screening for NCD prevention, patient education and referral [47].

Within primary care, integrated care pathways (ICPs) are instruments designed to map out the direction of clinical and administrative activities for all healthcare professionals working with NCD groups. Instead of reactive or crisis care, ICPs are designed to provide improved service for both patients and carers through a more proactive care planning approach [56]. Physical activity has a role to play within ICPs in the primary and secondary prevention and management of NCDs.

Figure 1 outlines the Physical Activity Pathways in Healthcare Model (PAPHM). This model, adapted from the physical activity care pathway model [4,5], outlines the architecture for the adoption of population level evidence-based approaches for the promotion of physical activity within the healthcare setting. It has five stages, i) patient recruitment, ii) screen, iii) intervene, iv) active participation and v) review. In stage one, the healthcare professional (i.e. referring practitioner) recruits the patient either opportunistically or through targeted invitation to patients from a disease register. They then screen (stage 2) the patient using the 3-item physical activity screening questionnaire (Appendix C).

This assesses the patient's current level of physical activity and their readiness to change their behaviour. Based on the outcome of this screening stage, an appropriate intervention is offered (stage 3). This intervention is one of the three physical activity pathways described below. Following the intervention advice provided by the healthcare professional, the patient engages in active participation (stage 4), and then takes part in a structured routine follow-up or review (stage 5).

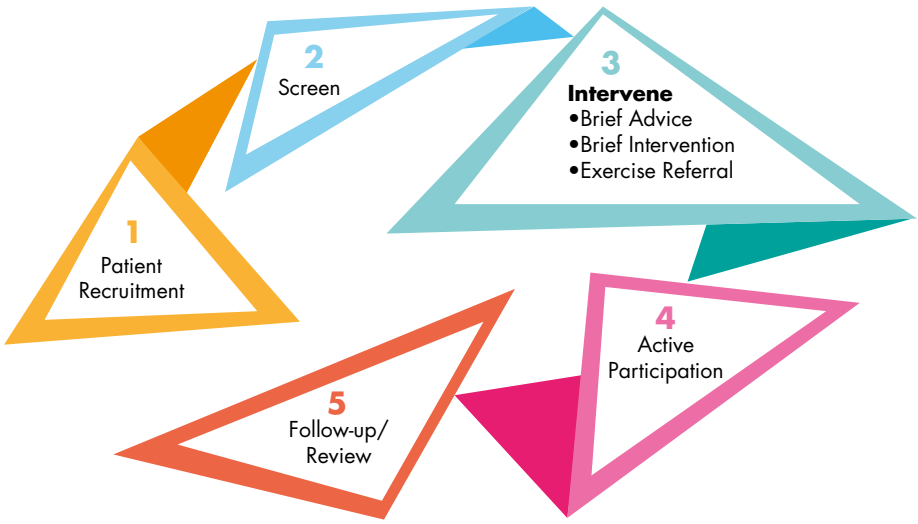

Figure 1: The Physical Activity Pathways in Healthcare Model (PAPHM)

In stage 3 of the PAPHM, the healthcare professional offers the patient an appropriate intervention. Three evidence-based delivery methods or physical activity 'pathways' exist in the healthcare setting [57]. These pathways, explained in Table 2, are brief advice, brief intervention and exercise referral. Evidence supports the effectiveness of brief advice and brief intervention by healthcare professionals to increase physical activity levels among the general population, and in particular inactive adults [1]. Evidence suggests that exercise referral is an effective targeted health intervention for specific patients [2], but it has limited evidence as an effective intervention for the general population [3]. In 2014, the UK National Institute for Health and Care Excellence (NICE) published guidelines recommending that for people who are sedentary or inactive and have existing health conditions or other factors that put them at increased risk of ill health, policy makers and commissioners should fund exercise referral schemes (ERS) that incorporate behaviour change techniques, collect a minimum set of evaluation data and make that data available to inform future practice [58].

Table 2: Three physical activity pathways in the healthcare setting [47]

Brief advice: Involves a short intervention (generally approx. 3 minutes) and involves opportunistic advice to raise awareness of and assess a person's willingness to engage in further discussion about, healthy lifestyle issues. It generally involves giving information about the importance of behaviour change and simple advice to support this behaviour change.

Brief intervention: Involves opportunistic advice, discussion, negotiation or encouragement. The intervention can vary from basic advice to more extended, individually-focused attempts to identify and change factors that influence activity levels.

Exercise referral: Involves the 'referral of a patient by a healthcare professional to a service offering an assessment of need, development of a tailored physical activity programme, monitoring of progress and a follow-up. Service refers to means i) a publically funded or privately operated service, which may take place within a gym, leisure centre or at some other location; and/or ii) an individual exercise professional operating an exercise referral service in a variety of settings within the local community.

Factors Associated with Effective Exercise Referral Schemes

The Public Health Advisory Committee responsible for developing the NICE guidelines for exercise referral acknowledged that a number of factors may influence the effectiveness of ERS [59]. In particular, the effectiveness of an ERS is ultimately dependent upon uptake (the proportion of individuals referred within an ERS who attend the initial consultation or exercise session) and adherence (the level and duration of participation in ERS of those who take up the scheme) [2]. Targeting the factors that influence the uptake and adherence to ERS can guide the development of more effective schemes. For example, older adults are more likely to take up and adhere to ERS compared with younger adults [3,60]. Women are more likely to take up ERS compared with men, however men are more likely to adhere to ERS than women [60,61]. Qualitative analysis has identified elements of good practice for enhancing ERS uptake and adherence which are outlined in Table 3.

Table 3: Factors that increase ERS uptake and adherence

Referral Process	• Referring practitioner fully explaining the process of referral [60] • Minimal delay between referral and initial exercise consultation [60] • Support from exercise professionals upon arrival to reduce anxiety [60] • Referring practitioner expressing interest in participant progress [3]
Environment	• Positive perception of the environment [3] • Presence of parks and green spaces in the urban environment [3] • Environment conducive to changing physical activity levels [3]
Intervention	• Participant-centred programming [60] • Provision of classes specifically for ERS participants and specific groups (e.g. obese, single-sex) [62] • Interventions that target gradual small changes in PA levels, rather than intensive exercise sessions [3] • Fidelity of the intervention [3]
Support	• Enhanced appreciation of participant needs [62] • Providing an opportunity to develop social support networks[61] • Use of motivational counselling and ongoing support [3]
Accessibility	• Additional exercise sessions at times to suit the working day [62] • Reduced cost or free access, particularly in deprived communities [60]

Section 3:

Development of the NERF

The NERF has been developed using a rigorous and comprehensive process, which included:

1. *A review of literature*

   A review of the literature on the evidence for ERS was conducted. The review included both peer-reviewed publications and published reports. The review also identified the factors influencing the effectiveness of ERS, which was used to generate a checklist for ERS good practice.

2. *Learnings from the GPERP*

   Learnings from the GPERP were identified through review of the GPERP analysis report, and consultation with the GPERP steering group and GPERP local coordinators.

3. *Consultation with an advisory panel*

   A small dynamic NERF advisory panel was identified and recruited. The panel consisted of 56 representatives from both the health (e.g. HSE, Department of Health, healthcare professional representative bodies) and non-health sector (e.g. exercise professional representative body, local authorities, sport and physical activity bodies, charities, academics) in Ireland, essential for the successful implementation of the NERF (Appendix A). The advisory panel was consulted throughout the process of developing the NERF, including consultation on the Outline Concept, at the Expert Symposium and on Draft 1 and Draft 2 of the NERF.

4. *Expert Symposium*

   An Expert Symposium was held in Dublin City University on June 19th, 2014. Five international experts on physical activity and public health and exercise referral, the advisory panel, and other guests were invited to attend the symposium. The purpose of the symposium was to (i) have international experts outline their country's current practice in relation to exercise referral, and (ii) advise on how Ireland can best develop a NERF, and (iii) consultation with the advisory panel. Details of the symposium are outlined in Appendix D.

5. ***Consultation with an expert panel***

   Following the Expert Symposium, the international experts were invited to join the working group to reflect on the symposium and using the feedback obtained, begin to generate Draft 1 of the NERF.

6. ***Consultation with a business advisory group***

   A small expert business advisory group was identified and recruited to develop a business model for the NERF.

7. ***Public consultation***

   Draft 2 of the NERF was made available for a 5-week online public consultation. A NERF website (www.exercisereferral.info) was developed, which contained Draft 2 and the feedback form. The Advisory Panel was requested to distribute the call for consultation as widely as possible through their organization and networks. Other dissemination pathways included Twitter and the DCU School of Health and Human Performance website. Feedback was received from 56 organisations/individuals, with a total of 480 comments regarding Draft 2.

Section 4:

Vision

Vision:

Those living with NCDs or mental illness will enjoy more active and healthier lives

Aim:

To increase physical activity levels and improve health in individuals living with an established NCD or mental illness.

Objectives:

1. To outline referral pathways to quality, safe and effective supervised physical activity opportunities for individuals living with an established NCD or mental illness.
2. To develop the knowledge, attitude and skills of health professionals and physical activity service providers in relation to physical activity and its role for the primary and secondary prevention of NCDs.
3. To describe an appropriate evaluation framework for the NERF.

Core Principles

The NERF is underpinned by a number of core principles, which include:

a. For structured exercise opportunities, the service provision should offer shared common infrastructure, staff support and programme content (with appropriate disease specific modifications) to all clinical groups
b. Lifestyle PA opportunities should be offered, these include individual's choosing their own activities
c. Staff involved in delivery should receive appropriate training and support
d. The service offered should be evidence-based and/or best practice
e. Evaluation should be built into the process and used to adapt and improve the service offered
f. Service provision should primarily be community-based
g. Equality of access for all eligible patients

Section 5:

Key Stakeholders

Table 4 outlines the NERF key stakeholders. The details of each stakeholder are presented within this section. Section 6 will outline the participant pathway through the NERF.

Table 4: **NERF Stakeholders**

Stakeholder	Criteria	Purpose
Exercise Referral Unit	National Manager and support staff	i. To manage the NERF ii. To provide assistance to referring practitioners and service providers
Participants	Adults with an established NCD or mental illness	To avail of the referral offered by the referring practitioner and the service offered by the service provider
Referring Practitioners	Health care professionals	To offer referral to suitable patients
Service Providers	Physical activity providers	To provide safe and effective supervised physical activity opportunities

Exercise Referral Unit

The NERF will be governed by the ERU. The ERU will be a national structure under the direction of and resourced by the HSE. The ERU should be headed by a part-time national clinical lead with expertise in sports and exercise medicine. The ERU will also include a full-time National Programme Manager and a recommended 2-3 full-time support staff, depending on available resources and service demand. The unit will consist of individuals with qualifications in exercise science, behaviour change psychology, and physiotherapy. The establishment, development, and operation of the ERU will be guided by consultation with key partners, including the Irish College of General Practitioners (ICGP), Irish Society of Chartered Physiotherapists (ISCP), Exercise and Sports Science Association of Ireland, Register of Exercise Professionals (REPs) Ireland etc. The ERU will perform two main roles:

1. Manage the efficient implementation of the NERF

2. Provide assistance to NERF participants, referring practitioners, and service providers

Managing the NERF

The ERU will manage the implementation of the NERF including management of the NERF national budget. The ERU will develop the NERF protocols and procedures, including information and communication technology (ICT) and data handling resources and procedures. The ERU will develop a NERF communication strategy and oversee the development of referring practitioner and service provider training. The ERU will put in place memorandums of understanding (MOU) with referring practitioners and physical activity service providers to agree to implement these NERF protocols and procedures. The ERU will monitor and evaluate the NERF and drive future development. Detailed roles and responsibilites of the ERU are described in Appendix E.

Assisting the NERF Stakeholders

The ERU will play an intermediary role and provide medical, exercise specific and behaviour change expertise to referring practitioners, service providers and through the referral process to NERF participants (Figure 2). The ERU will be a remote resource and through the use of technology will:

i. be a source of advice and support to the referring practitioners to increase capacity to make referrals

ii. in cases of uncertainty, to take referrals from the referring practitioner and match the patient to a suitable local service provider

The ERU will also assist the referring practitioners and physical activity service providers in complying with NERF protocols and procedures. Detailed roles and responsibilities of the ERU are described in Appendix E.

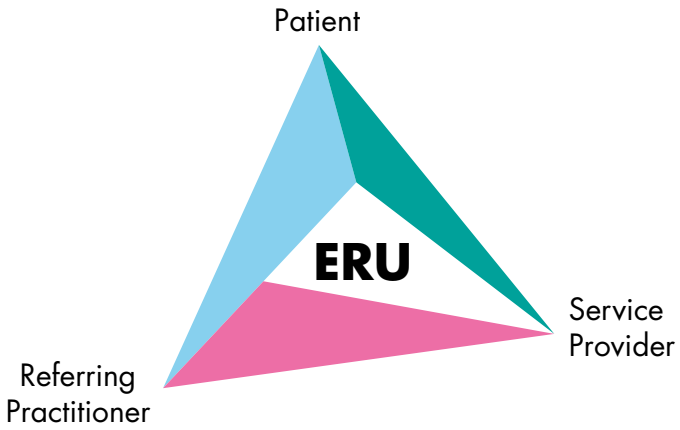

Figure 2: The Intermediary role of the Exercise Referral Unit

Participants

Evidence supports the effectiveness of exercise referral as a targeted health intervention for individuals with existing health conditions [2]. The number of people living with NCDs in Ireland is substantial (Table 5). Over one third (38%) of all Irish people and 62% of those over 65 years have a chronic illness [63]. These individuals are the target population for NERF.

Table 5: Estimated prevalence of major chronic disease in Ireland [54]

NCD	Estimated prevalence	Comment
CVD - CHD - Stroke - Heart failure	250,000 100,000 30,000 90,000	Likely to be a substantial underestimate due to undiagnosed disease and unquantified prevalance of peripheral artery disease.
Cancer	90,000	Based on people diagnosed with invasive cancer (excluding non-melanoma skin cancer) between 1994 and 2008 who were still alive on 31st December 2008. Incidence of new cases diagnosed each year is ~30,000.
COPD	440,000	No Irish prevalence data available. Estimated based on international studies. 180,000 have moderate to severe disease, with only 50% likely to be diagnosed.
Diabetes	190,000	Based on National Diabetes Programme estimate for 2015.

CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease; NCD, non-communicable disease

Adults living with an established NCD or mental illness are classified as Category A or Category B, depending on the level of supervision required during exercise (Table 6). The level of supervision required refers to the risk of an event during exercise, and motivational and physical assistance requirements. The level of supervision required for specific chronic conditions was determined through consultation with medical specialists in each clinical area (Appendix B). The majority of the estimated target population will be classified as Category B. It is estimated that 5-10% of the target population will be classified as Category A[a] . The scheme aims to transition Category A patients to Category B, i.e. to facilitate patients to become more independent exercisers and reduce their supervision requirements.

[a] This is based on observational evidence over a 7-year period in a community-based exercise rehabilitation programme in Ireland

Table 6: Patient categories

Category A
Adults with an established NCD or mental illness who would benefit from regular physical activity and who for whatever reason require the supervision of a physician or other appropriately trained healthcare professional (i.e. advanced cardiac life support (ACLS) or equivalent) while undergoing a physical activity programme. Appendix F provides inclusion criteria guidelines. Examples include stable angina, COPD GOLD Stage 3-4, established autonomic neuropathy.
Category B
Adults with an established NCD or mental illness who would benefit from regular physical activity and who do not require the presence of a physician or other appropriately trained healthcare professional (i.e. ACLS or equivalent) while undergoing a supervised physical activity programme. Appendix F provides inclusion criteria guidelines. Examples include post non-recent (> 2 months) percutaneous coronary intervention, pulmonary disease significantly affecting quality of life, pre-diabetes.
Category C
Adults who are inactive or sedentary or at risk of developing a NCD and who would benefit from regular physical activity.

Patients who are inactive, sedentary or at risk of developing an NCD are categorised as Category C in table 6. These individuals make up a significant proportion of the adult population in Ireland (Table 7). As exercise referral is not evidence-based as a population level physical activity intervention, Category C individuals are recommended to use the evidence-based brief advice or brief intervention pathways of PAPHM. These require low levels of supervision and Category C patients should be signposted to a broad range of physical activity opportunities within a variety of settings in their local community by their health professional. Figure 3 outlines how Category A and B progress through PAPHM in comparison to Category C.

Table 7: Estimated prevalence of risk factors for NCDs in Irish adults [54]

Risk Factor	Estimated Prevalence in Irish Adults
Overweight	37% (NANS[64]), 39% (SLAN[65]), 44% (TILDA[66])
Obesity	24% (NANS[64]), 25% (SLAN[65]), 34% (TILDA[66])
Sedentary	12% (ISM[67])
Physically inactive	68% (ISM[67])
Tobacco use	29% (SLAN[65]), 22% (NTCO[68])
Hypertension	49% (TILDA[66], aged ≥50 years), 60% (SLAN[65], aged ≥45 years)
Hypercholesterolemia	75% (TILDA[66], aged ≥50 years), 82% (SLAN[65], aged ≥45 years)

Overweight, body mass index 25.0-29.9 kg/m^2; Obesity, body mass index ≥30 kg/m^2; Sedentary, did not participate (20 min) in recreational activity during the previous 7 days and does not cycle or walk regularly for transport; Physically inactive, not meeting the National Physical Activity Guidelines (30 min of moderate physcial activity on ≥5 days per week); Hypertension, blood pressure ≥140/90 mm Hg or taking anti-hypertensive medication; Hypercholesterolemia, total serum cholesterol ≥ 5mmol/L.
ISM, Irish Sports Monitor; NANS, National Adult Nutrition Survey; NTCO, National Tobacco Control Office; SLAN, Survey of Lifestyle, Attitudes and Nutrition; TILDA, The Irish Longitudinal Study on Ageing.

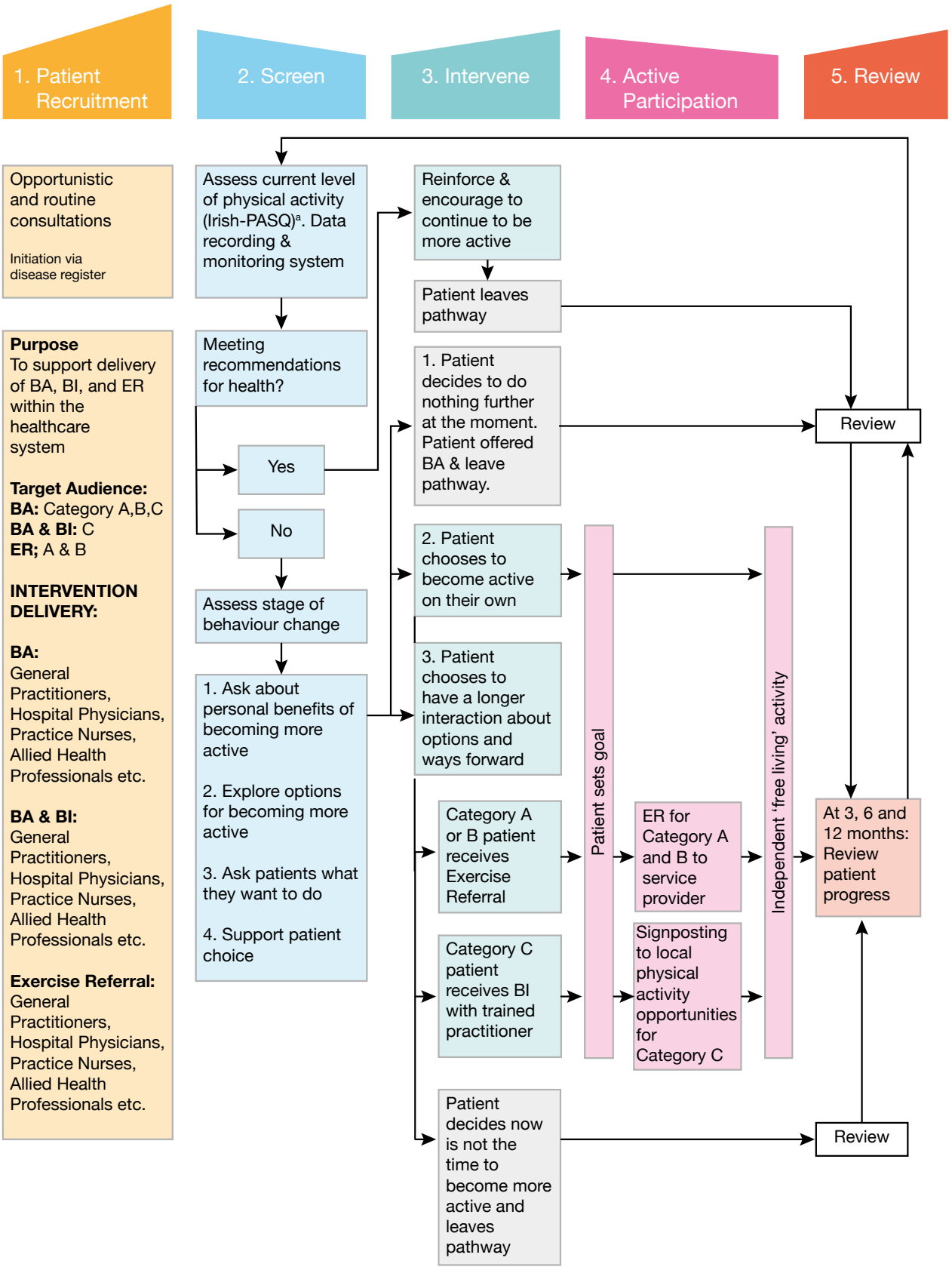

Figure 3: Physical Activity Pathways in Healthcare Model: A model of best practice.
* Note: Adapted from NHS Scotland, 2014 [47] [a] Irish-PASQ in Appendix C

Referring Practitioners

The role of NERF referring practitioner is open to all healthcare professionals from both primary and secondary care and in both acute and community settings. Referring practitioners may include, but is not restricted to, the following:

- General practitioners[b]
- Hospital physicians and multidisciplinary colleagues
- Primary care teams
- Practice nurses and advanced nurse practitioners
- Clinical nurses specialists
- Physiotherapists
- Allied health professionals (e.g. occupational therapists, health promotion staff)
- Community care personnel (e.g. nurses, dietitians, pharmacists)
- Occupational health departments
- Mental health professionals
- Existing health service exercise rehabilitation programmes

Existing Health Service Exercise Rehabilitation Programmes

There are existing well-recognised, multi-disciplinary care pathways within the health service for patients with certain chronic conditions, which include an appropriately delivered physical activity component as well as other preventive activities.

Cardiac rehabilitation is usually offered across 3 phases to patients recovering from an acute cardiac event or procedure, with Phase 3 primarily delivered in an out-patient setting. Cardiac rehabilitation units nationally catered for 4500 patients in 2012 [69].

Pulmonary rehabilitation is a structured programme with multidisciplinary input including a specified exercise component. It is recognised as a key component of COPD care. Currently it is both under-resourced and under-developed in Ireland compared with cardiac rehabilitation.

Physiotherapy-led programmes for a range of chronic disease groups exist within primary, intermediate, and acute health settings. These include stroke units, falls prevention programmes, and multiple sclerosis and Parkinson's Disease programmes.

[b]The General Practitioner will be central to the work of the ERU as described the electronic referral system section 6.

Within the NERF, cardiac, pulmonary and physiotherapy-led rehabilitation services will adopt the role of referring practitioner. These structures will continue to provide their multicomponent services to the appropriate target patients. Upon completion of these programmes, patients will be triaged into Category A or Category B and referred to the appropriate NERF service. For these patients, NERF represents part of the physical activity pathway downstream to these existing rehabilitation services.

Competencies and Training for Referring Practitioners

Referring practitioners must meet the standard requirements for registration to their representative body. The key competencies recommended for referring practitioners for the successful implementation of the NERF include:

- An understanding of the NERF protocols and procedures including the screening process, the referral process, the service delivery options, and the NERF core principles.
- An understanding of both the benefits and risks of physical activity and its place in an integrated care plan for the patient.
- Training in brief advice/brief intervention to be able to determine the patient's stage of behaviour change and facilitate behaviour change of participants.

Training Delivery for Referring Practitioners

For the purposes of up-skilling an immediate workforce, access to an appropriate, accredited interactive e-learning training module is recommended. Online training in physical activity for health for healthcare professionals has been implemented successfully in other countries[c] . The eLearning module entitled Promoting Physical Activity was developed by HSE Physical Activity Coordinators, ICGP, Faculty of Sport and Exercise Medicine (FSEM), Irish Practice Nurses Association (IPNA), and ISCP. This module is already available to health professionals working in the HSE via HSELand and is already accredited by various professional bodies for continuing professional development (CPD), including ICGP, IPNA, Irish Nutrition and Dietetic Institute (INDI), and An Bord Altranais. The module will need to be reviewed and updated with NERF specific content. This should be done in collaboration with the organisations that originally developed the module. It would also need to become recognized by other representative bodies of health professionals identified as referring practitioners under NERF and made accessible to health professionals outside of the HSE. The HSE should co-ordinate and facilitate this process. Training in brief advice/brief intervention may be completed as a core part of this programme or as part of training in other lifestyle behaviours, e.g. smoking cessation etc.

[c] E.g. www.help-theproject.eu (Healthcare English Language Programme), and http://gpcpd.walesdeanery.org/index.php/welcome-to-motivate-2-move. These websites provide publicly available information for healthcare professionals.

For upskilling the future workforce, training in exercise referral for new health professionals should be integrated into the pre-service curriculum on any vocational programme related to healthcare. This area is already identified for development in Ireland's National Physical Activity Plan under action area three - Health, and specifically in Action Points 22, 23, 25 and 26 (Get Ireland Active! The National Physical Activity Plan for Ireland, page 22) [13]. The content of this training should be developed in consultation with key partners, including the ICGP, ISCP, REPs Ireland etc.

Service Providers

The role of NERF service provider is open to all appropriately trained and qualified service providers. Service providers may include, but is not restricted to, the following:

- PA leaders (e.g. walking leaders)
- Self-employed personal trainers
- Appropriately qualified exercise facility staff
- Graduate exercise specialists (exercise or sport scientists, physiotherapists)
- Graduate specialists (occupational therapists, cardiac and pulmonary rehabilitation nurses, other specialist nurses)

Competencies and Training for Service Providers

The training requirements for service providers are tiered and dependent upon the participant category (A or B) they wish to provide service to. It is recommended that the REPs Ireland be engaged by the ERU to develop or adapt existing international clinical exercise / exercise referral standards for the NERF to deal specifically with Category A and B participants. REPs Ireland will be supported by the ERU in the development of these standards. It is recommended that REPs Ireland liaise with the HSE and the Irish medical community, including national clinical programme leads, and healthcare professional representative bodies (e.g. ICGP, ISCP etc.) to increase confidence in referring practitioners. The development of service provider standards will be subject to an external verification process directed by an academic institution.

The lead service provider refers to the individual with primary responsibility for NERF participants within the service. Within a centre or facility this may refer to the individual with overall responsibility for the content and supervision of the class. In a community-based programme, the lead service provider may refer to the individual responsible for the organization and delivery of the programme or multiple programmes. It is recommended that NERF standards for the lead service provider for Category A patients be set at European Qualification Framework (EQF) level 7 or above [National Framework of Qualifications (NFQ) level 9 or above] qualification in exercise science, physiotherapy, nursing, NCD management or a related topic or an EQF level 6 (NFQ Level 8) with additional clinical experience and other appropriate training, e.g. ACLS. The lead service provider for Category B participants should have an EQF level 6 or above (NFQ level 7/8 or above) appropriate qualification. It may be possible to incorporate other awards into these standards, for example the ACLS qualification.

For service providers who offer structured exercise classes (e.g. circuits, exercise to music etc), a European Health and Fitness Association (EHFA) level 3 basic fitness instructor qualification or equivalent is recommended to the requisite exercise class leadership skills. It is recommended that the REPs Ireland is engaged to develop or adapt an existing international set of standards for PA leaders to deal specifically with B participants. It is envisaged that the PA leader training would be at a basic level below EHFA level 3. It may be possible to incorporate other awards into these standards for example the Irish Heart Foundation award for walking leaders, Mountaineering Ireland walking training, Coaching Ireland qualifications. However, it is recognised that there can be a significant turnover in community PA leaders so training needs to be frequent and cost-effective [d]. Consultation should be carried out with community organisations such as Get Ireland Walking and the Irish Heart Foundation to ensure that the process is not burdensome on PA leaders.

Training Delivery for Service Providers

Public or private educational providers, e.g. Higher Education Institutions, who have programmes that meet appropriate external accreditation and validation standards and who demonstrate that they have competent staff and adequate facilities in place to deliver the above education/curriculum will provide training for service providers. It is recommended that REPs Ireland is engaged to accredit and categorize these programmes.

Training in exercise referral should be integrated into the pre-service curriculum on any vocational programme related to service provision for NERF. Ideally, in time the development of an appropriate, accredited interactive e-learning training module is recommended. This should be developed in consultation with key partners including REPs Ireland, ISCP etc. The development of such a resource will help to ensure efficient project roll-out, and should dove-tail where possible with the resource development for the referring practitioners. Where possible, the existing GPERP training modules should be adapted for this purpose.

[d] Example of good practice is Scotland's Paths for All: http://www.pathsforall.org.uk/

Section 6:

Participant Pathway

Within the NERF, participants progress through the 5 stages of the Physical Activity Pathways in Healthcare Model (PAPHM) (Figure 4).

Stage 1: Participant Recruitment

Referring practitioners recruit patients for exercise referral either opportunistically or through targeted invitations to patients from a disease register. Detailed roles and responsibilities of referring practitioners are presented in Appendix G.

Self-initiation of Referral

In the evaluation of the Welsh Exercise Referral Scheme, results found that patients who initiated the referral decision were more likely to adhere to the ERS than practitioner-initiated referrals [2]. Patients may self-initiate referral by actively seeking referral from their health professional. Patients will be made aware of the scheme through public education campaigns and the NERF communication strategy, which is the responsibility of the ERU. This pathway via the health professional is designed to ensure patients are suitable for the scheme and that relevant clinical information is made available.

Stage 2: Screen

Referring practitioners establish the suitability of a patient for the NERF scheme by:

1. Assessing the patient's current physical activity status
2. Assessing the patient's stage of exercise behaviour change
3. Using the inclusion/exclusion guidelines coupled with clinical judgment

Patient activity status and stage of behaviour change is assessed by completion of the 3-item Irish PA screening questionnaire (Appendix C). When healthcare professionals register as NERF referring practitioners, they will receive a NERF pack, in both hard copy and e-based format. This pack will contain all the relevant information required to make referrals, e.g. screening questionnaires, inclusion/exclusion guidelines, and also patient pamphlets. Exercise referral pamphlets for Category A and Category B patients will contain information of the NERF service and what the patient is to expect. Brief intervention pamphlets can be provided to Category C patients and Category A or B patients in the pre-contemplation stage of physical activity behaviour change.

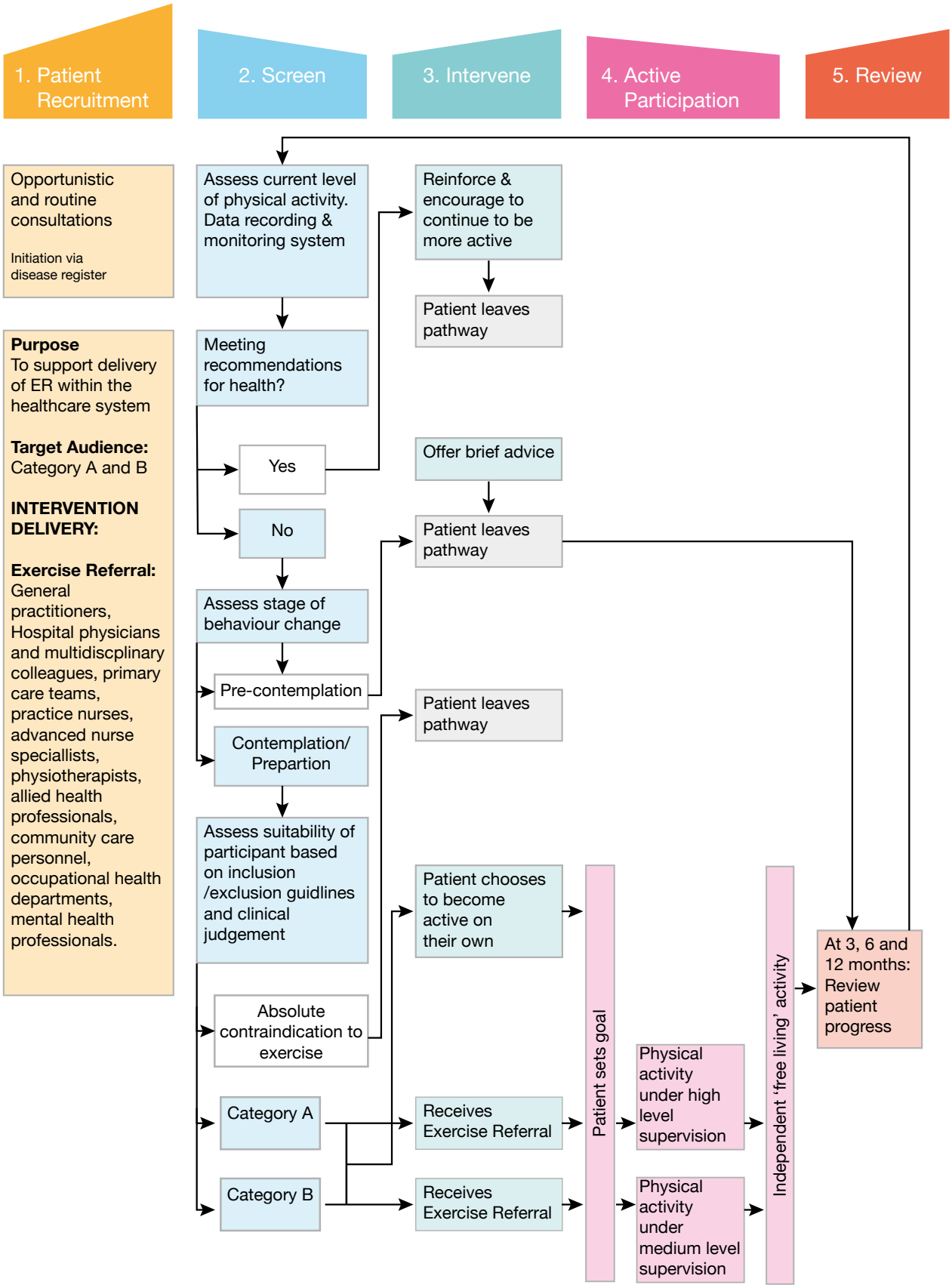

Figure 4: Participant progress through the Physical Activity Pathways in Healthcare Model

Stage 3: Intervene

Based on the outcome of this screening stage, an appropriate intervention is offered. The NERF will offer exercise referral to Category A and B patients (Figure 5). Category A patients will receive referral to a high level supervision service. Category B patients will receive referral to a medium level supervision service. Referring practitioners will have access to a database of NERF-approved physical activity opportunities. Participants will be referred to the most appropriate service based on supervision requirements and patient preference. Both Category A and B patients can be prescribed remotely supervised self-directed physical activity programmes. These self-directed programmes will involve lower intensity physical activity and a smaller range of habitual exercise modalities and therefore, do not require the same level of supervision as structured group exercise programmes. Self-directed programmes will be prescribed to facilitate patient preferences to exercise alone or at home, or where high and medium level supervision services are not accessible. Discretion and clinical judgement can be used in cases requiring special consideration following consultation with the ERU. In the case of an inappropriate referral, i.e. to an unsuitable level of supervision, participants will be transitioned to a suitable level. This transition may be initiated by the participant or service provider and will involve consultation with the ERU. Patient transition from PA opportunities offering higher levels of supervision to those offering a lower level of supervision, as changes in health status allow, are recommended. Initiation and supervision of this transition process will involve the service provider, the patient and the referring practitioner. Support in this decision-making process will be available through the ERU.

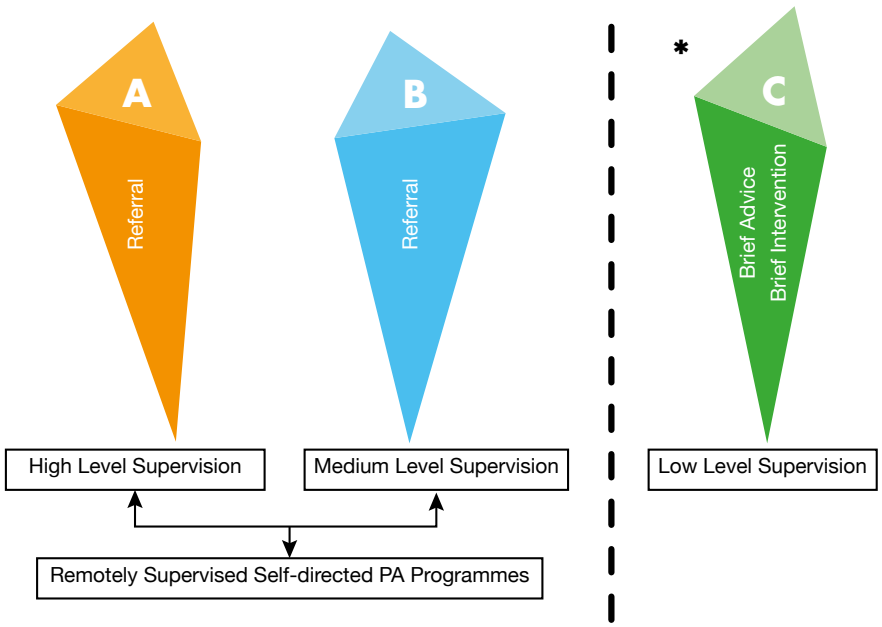

Figure 5: Patient pathways. *Brief advice and brief intervention [e] are recommended for Category C patients as part of the PAPHM and is within the remit of the National Physical Activity Plan.

[e] Information on use of brief advice and brief intervention in other countries who promote physical activity within healthcare settings can be found at www.healthscotland.com

Exercise Referral Pathways

Category A and B patients can be referred to physical activity opportunities via two pathways (Figure 6):

1. Referring practitioner directs the patient to the physical activity service provider
2. In cases of uncertainty, referring practitioner directs the patient to the ERU, which then matches the patient to a suitable physical activity service provider

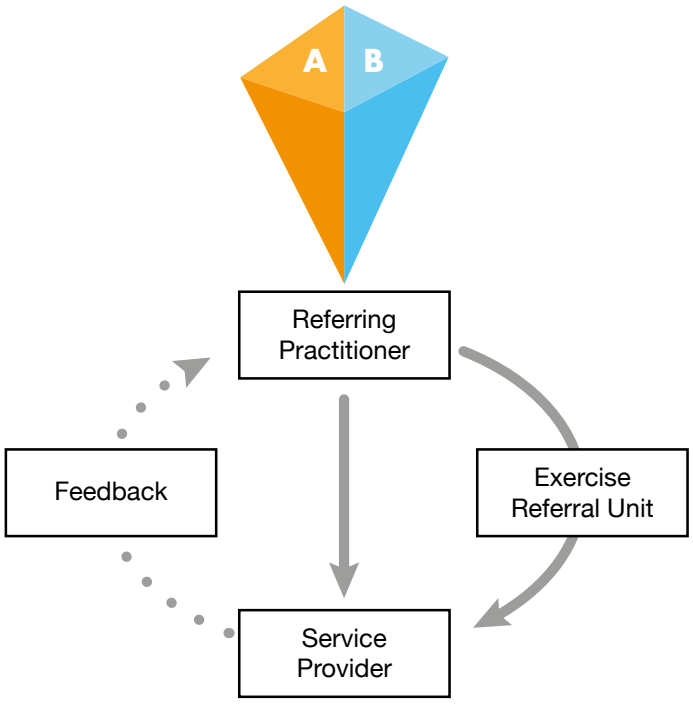

Figure 6: Exercise referral pathways

Electronic Referral System

The NERF requires a user-friendly electronic referral system. The electronic referral system will be used for the following functions:

- By referring practitioners to refer patients to service providers
- By referring practitioners to refer patients to the ERU
- By the ERU to refer patients to service providers
- By the ERU to attain patients clinical information from GPs
- By service providers to provide feedback to the ERU and referring practitioners

Participant clinical information is required to undertake suitability screening for exercise referral and provide relevant information to the service provider relating to the patient's health and the implication of this for activities of daily living and, if known, for exercise. To facilitate this, the electronic referral system should link with Healthlink, an electronic communications project that facilitates the transfer of information between primary and secondary care in Ireland, or equivalent. The referral system should support automatic retrieval of the required set of data. This will reduce the time taken by referring practitioners to complete the referral process. Participant informed consent is required to attain and transfer the relevant clinical information. In cases where the referring practitioner does not have access to patient medical records, the ERU will request this information from the participants GP. This will be done through the electronic referral system to again reduce the time commitment for GPs. Participant informed consent will be transfered from the ERU to the GP. An electronic referral system will allow for seamless communication between referring practitioners, the ERU and service providers. It will allow efficient monitoring, evaluation, and feedback. A single streamlined referral system will also avoid multiple referrals for the same patient.

Integration with Other Healthcare Pathways

Patients using the NERF will often have other health care needs. It will be important that a streamlined mechanism of inter-referral be developed whereby the NERF can to be used as a pathway to appropriate services, which will include the following:

- Weight reduction
- Healthy nutrition
- Smoking cessation
- Alcohol and substance misuse
- Chronic illness self-management
- Stress management

Likewise these services should themselves operate as pathways to the NERF when appropriate. Efforts should be made to integrate these services by firstly increasing awareness of other support areas. At a minimum print resources on the benefits of PA should be available to individuals on other healthcare pathways. Ideally, where screening is being carried out for other reasons e.g. risk of diabetes etc., the NERF should be automatically flagged and screening for ER performed. Ultimately, the goal should be a holistic model of care rather than multiple referrals.

Stage 4: Active Participation

Service provision can be offered through either of the following:

a) a publicly funded or privately operated service that may take place within a community centre, exercise facility or at some other location

b) an individual exercise professional operating an exercise referral service in a variety of settings

The structure of the service provision will be dependent on the participant category and hence the level of supervision required. Figure 7 outlines the service provision options for each category, which are explained below. The certification and inspection of service provision will be self-policing through the completion of an annual audit form. The audit form will be reviewed by the ERU to ensure that the service provision meets the staff competency and training and infrastructure and resource requirements outlined within this document. The audit will also ensure health and safety standards and exercise professional practice standards are adhered to. By signing the MOU with the HSE, service providers are agreeing to meet and maintain these standards. The ERU will also conduct random onsite inspections, particularly of high level supervision service provision and other service provision where poor practice is suspected. A list of all NERF-approved PA opportunities should then be made available through the HSE website www.getirelandactive.ie. Appendix H outlines examples of evidence-ground programmes.

Category A: High Level Supervision			
NERF Centres		Appropriately Qualified Exercise Professionals	
Category B: Medium Level Supervision			
NERF Centres	Exercise Facilities	Community-based Physical Activity Programmes	Appropriately Qualified Exercise Professionals
Category A and B: Remote Supervision			
Self-directed Physical Activity Programmes			

Figure 7: Service Provision Structure

Category A: High Level Supervision

Category A participants require a high level of supervision while undertaking a physical activity programme. Service providers for Category A participants must meet the training standards developed by REPs Ireland. Category A participants can undertake physical activity opportunities in the following settings:

- NERF centres
- With appropriately qualified individual exercise professionals

NERF Centres

NERF centres can accommodate both Category A and B participants. It is estimated that only 5-10% of the NERF target population will be classified as Category A and therefore, the majority of the participants in NERF centres will be Category B. There will be no NERF centres with Category A participants only. All centres that cater for Category A will also have Category B participants. Centres may accommodate Category B participants only. NERF centres accommodating Category A participants will provide supervision by a physician or other appropriately trained healthcare professional (i.e. ACLS or equivalent). NERF centres accommodating Category B participants only do not require this medical supervision. The NERF aims to transition Category A patients to Category B as soon as is appropriate, i.e. to facilitate patients to become more independent exercisers and reduce their supervision requirements.

NERF centres will ideally be located in academic institutions and primary care centres, where feasible, throughout Ireland. Examples of currently existing services that would be assigned NERF centre status include MedEx, DCU; Croi Heart and Stroke Centre; and Living Health Clinic, Mitchelstown. The concept of NERF centres will be based on exploiting existing resources. For example, locating a NERF centre within an academic institute may utilise existing exercise facilities and research expertise. Within a primary care centre, medical support may already be present onsite.

A step-wise approach to the roll-out of NERF centres is recommended. Ideally, every individual in Ireland should be able to access a NERF centre with reasonable ease, e.g. within 1 hour. Ultimately, a NERF centre could be housed in every higher education institution nationwide depending on regional demand. In regions where higher education institutions are not accessible, primary care centres can be used to reach the target.

Infrastructure and Resource Requirements

In addition, to the staff training standards, Category A service provision through both NERF centres and individual exercise professionals must meet the following infrastructure and resource requirements.

Facilities

Service providers require sufficient available space to safely undertake physical activity sessions and safe and convenient access for participants with disability, including wheelchair access. Service provision based in centres and facilities also require changing facilities and equipment to undertake aerobic and strength exercises. The equipment for strength exercises can include hand-held weights, resistance bands etc. and does not necessarily require availability of weight machines. Centres and facilities must certify with industry quality assurance standards, e.g. Ireland Active White Flag, Health Information and Quality Authority (HIQA), or equivalent.

Staffing

The recommended maximum ratio of participants to instructors is dependent on the participants' risk of an event during exercise. Group size and staffing requirements need to be flexible to take account of varying client needs and risk stratification. It is recommended that the maximum ratio of participants to service providers is 15:1. No physical activity session should take place without 2 delivery personnel immediately available. The requirement for a second person arises in case a medical incident occurs in the class. Within centres and facilities, the second person may be in an adjoining room in the building.

Medical Support

Category A participants require the presence of a physician or other appropriately trained healthcare professional (i.e. ACLS or equivalent) when undertaking a physical activity programme. The service provider may have these qualifications or an additional person may be required to provide the necessary medical support. Immediate access to an automated external defibrillator (AED) and a trained user is also required. In centres and facilities, an emergency room should be available with access to a crash cart and a trained user.

Data Handling

It is essential that centres and facilities involved in the delivery of NERF will operate an efficient, electronic data management system with appropriate controls in respect of confidentiality and data protection. Adherent to appropriate ethical approval and informed consent procedures, all centres must agree to providing access to participant data for the purpose of programme monitoring/evaluation and for research purposes. The development and monitoring of appropriate informed consent and data handling procedures, in line with HSE policies and procedures and meeting statutory requirements regarding data protection will be the responsibility of the ERU.

Category B: Medium Level Supervision

Category B participants require a medium level of supervision while undertaking a physical activity programme. Service providers for Category B participants must meet the training standards developed by REPs Ireland. Category B participants can undertake physical activity opportunities in the following settings:

- NERF centres
- Exercise facilities
- Community-based physical activity programmes
- With appropriately qualified individual exercise professionals

NERF Centres

As outlined above.

Exercise Facilities

Exercise facilities will provide a medium level of supervision and accommodate Category B participants. These facilities will be local leisure centres and suitable community venues in both public and private ownership, with trained exercise professionals and/or input from HSE PA coordinators, physiotherapists, nurses, and others.

Community-based Physical Activity Programmes

Medium level of supervision can also be provided through community-based PA programmes. These programmes will accommodate Category B participants. Community-based programmes offer an alternative to the gym setting, which is a commonly cited barrier to ERS uptake and adherence [61]. Community-based PA programmes can take place outdoors or in available community facilities. These programmes involve structured PA opportunities within the community, for example Green Steps, Men on the Move, and Sports Clubs for Health [70] (health-orientated sports activities in a club setting). Specific programmes may be developed to meet the requirement of sustainable standard nationwide programmes. Community-based PA programmes should be supported, where possible and appropriate, by a mixture of HSE Health Promotion, community physiotherapy teams, LSPs, sports development officers, local authority and local development programme staff and advocacy groups.

Infrastructure and Resource Requirements

In addition, to the staff training standards, Category B service provision must meet the following infrastructure and resource requirements.

Facilities

As outlined for high level supervision service providers.

Staffing

As outlined for high level supervision service providers.

Medical Support

Category B participants do not require the presence of a physician or other appropriately trained healthcare professional when undertaking a physical activity programme. Centres and facilities do not require an emergency room or crash cart. Centres and facilities do require immediate access to an AED and a trained user and to an appropriately stocked first aid kit and person qualified in first aid is required. Service providers for Category B participants operating outside of centres and facilities such as in the community or outdoors should know the location of a community AED and a trained user and must have an appropriately stocked first aid kit and have access to a person qualified in first aid.

Data Handling

As outlined for high level supervision service providers.

Category A and B: Remote Supervision

Both Category A and B participants can be prescribed remotely supervised self-directed physical activity programmes at home or in their own locality. These self-directed programmes will involve lower intensity physical activity and a smaller range of habitual exercise modalities and therefore, do not require the same level of supervision as structured group exercise programmes. These programmes will be ideally evidence-based/informed and developed using diverse and emerging methods of mHealth[f] and technology for remote tuition, feedback and monitoring. For example, remote monitoring could be achieved through the use of an appropriate 'app' or wearable technology such as the 'health' based watches. Examples of self-directed PA programmes include the Scottish GP prescribed pedometer walking challenge [71] and Step to a Better Belfast [72] and Physical Activity Towards Health (PATHway), a technology enabled physical activity programme for better self-management of CVD (www.pathway2health.eu).

[f] mHealth is an abbreviation for mobile health and refers to the practice of medicine and public health supported by mobile devices

Service Provision

Upon receipt of referral from a referring practitioner, the service provider will i) accept the referral; ii) conduct a pre-exercise assessment, design or select an appropriate physical activity programme, deliver a safe and effective programme, and monitor participant progress. Detailed roles and responsibilities of NERF service providers are presented in Appendix I.

Participant Acceptance

The service provider will confirm that the referral form contains all relevant information about the participant's health status and that the referral is appropriate. If the referral form is incomplete or the referral is inappropriate, the service provider will refer the participant back to the referring practitioner or ERU through the electronic referral system. Upon receipt of an appropriate and complete referral, the service provider will schedule the participant's first consultation/visit.

Pre-exercise Assessment

The service provider will obtain participant informed consent to participate in a pre-exercise assessment and then conduct a pre-exercise assessment in line with the NERF protocol outlined in the evaluation framework[g].

Physical Activity Programme: Design/Selection

The specific content of the physical activity programme is determined by the service provider and participant. A core principle of the NERF is the opportunity for participants to choose their own activities. The service provider will assist the participant in setting physical activity goals and action plan. The service provider will design or select a physical activity programme that matches the health status, risk stratification, needs and preferences of the participant. Within the service provider's capability and resources, a broad range of appropriate physical activity opportunities should be offered. General recommendations are to focus on the health-related components of fitness and in particular to include aerobic, flexibility, and strength exercise components within the programme. The participant should be considered in a holistic manner, rather than treating a specific condition, with the aim of improving the ability to perform activities of daily living and ultimately increasing daily physical activity and health. However, certain participants may require condition-specific adjustments or additions. For example, participants with orthopaedic or neurological conditions with falls risk would benefit from falls prevention training. It is the responsibility of the referring practitioner to transfer relevant clinical information to the service provider relating to the patient's health and the implication of this for activities of daily living and, if known, for exercise. Additionally, the pre-exercise assessment conducted by the service provider may highlight specific participant needs.

[g] The Evaluation Framework is outlined in section 7.

Physical Activity Programme: Delivery

The service provider will supervise the delivery of a safe and effective PA programme and provide support and encouragement to the participant throughout the programme. All participants will undertake a supervised programme for a minimum of 12 weeks, to include a recommended 2 supervised sessions per week. The ultimate emphasis is on facilitating the participant to become an independent exerciser, someone who engages regularly in health-enhancing physical activity. Following completion of the 12-week programme, a number of options exist for participants including:

1. Exit the programme and exercise independently

2. Exit the programme but subsequently seek re-referral to repeat the programme

3. On-going relationship with participant, which could be achieved a number of ways:

- Continuation in a supervised or peer-led programme within the service structure
- Independent physical activity with reassessment and programme review at intervals
- Planned participation in short duration 'refresher' programmes
- Maintained contact with encouragement/advice without any face to face contact

The duration of engagement will be decided through consultation between the participant and service provider and should be dependent upon the level of supervision required by the participant, participant preference, and the capacity of the centre, facility, or programme. Participants exiting the scheme will be signposted to suitable exit strategies.

Monitoring Progress

The service provider will monitor and record participant progress in accordance with NERF evaluation framework and where appropriate, adapt the participant's physical activity programme as their needs and preferences change. On-going feedback should be provided to the participant on their progress. The service provider will ensure participant data management systems are in place to monitor attendance and will identify and follow-up drop-outs.

Stage 5: Review

The final stage of the PAPHM is to review the participant's engagement with the scheme. All participants will undertake a 12-week programme and therefore, a review will be conducted at 12 weeks in line with the NERF evaluation framework. Subsequent reviews will be conducted at 6 months and 12 months. At these time points, some participants may be still engaged with the scheme, while others will have ceased engagement. Review at these timepoints will identify the long-term effects of the scheme on participant physical activity and health. Participants who are no longer engaged in the scheme at these timepoints will be contacted to undertake the review.

Section 7:

Evaluation Framework

Evaluation of the NERF is of the upmost importance to demonstrate its clinical and cost-effectiveness and provide information to assist ongoing improvement of the NERF. The lack of evaluation was identified as a substantial weakness and barrier in the original GPERP. The NICE guidelines underscore the critical nature of evaluation, recommending that policy makers and commissioners only fund ERS that collect a minimum set of evaluation data and make that data available to inform future practice [58]. The British Heart Foundation National Centre for Physical Activity and Health (BHFNC) toolkit for the design, implementation and evaluation of ERS recommends that the evaluation framework be agreed during the development of the scheme [73].

Evaluation should be participant-centred, i.e. the reasons for taking the measures are understood by participants and used as part of a motivational strategy which includes goal setting, feedback and enhancement of participant's perceived competence [74]. The WHO recommend that both process and outcome information is used to evaluate programme implementation as well as impact on desired outcomes [75]. Figure 8 outlines the minimum dataset for NERF evaluation. The process evaluation indicators are participant demographics and service utilisation. The outcome indicators are physical activity level and awareness, knowledge, and attitudes. Figure 9 outlines the optimal data set if the required resources and expertise are available. The additional process indicators include scheme fidelity and participant satisfaction. The additional outcome indicators include physiological outcomes, psychological well-being, disease risk, and healthcare utilisation. Valid and reliable questionnaires are available for the evaluation indicators. Evaluation should be ongoing and conducted at regular intervals. Evaluation of NERF will be overseen by the ERU and data collection will be performed by all stakeholders and information fed into the central electronic referral system to provide feedback.

Below are listed i) the rationale for each measure, ii) the timepoint at which each measure should be taken, iii) the measures to be used, iv) the recommended method for measurement and v) the personnel responsible for carrying out each assessment method.

MINIMUM EVALUATION				
BASELINE	DURING THE SCHEME	12 WEEKS	6 MONTHS	12 MONTHS
PROCESS				
Participant characteristics	Service utilisation			
OUTCOME				
PA levels Awareness, knowledge, and attitudes		PA levels Awareness, knowledge, and attitudes	PA levels Awareness, knowledge, and attitudes	PA levels Awareness, knowledge, and attitudes

Figure 8: NERF Evaluation Framework – Minimum

OPTIMAL EVALUATION				
BASELINE	DURING THE SCHEME	12 WEEKS	6 MONTHS	12 MONTHS
PROCESS				
Participant characteristics	Service utilisation Scheme fidelity	Participant satisfaction		
OUTCOME				
PA levels Awareness, knowledge, and attitudes Physiological outcomes Psychological well-being Disease risk Health care utilisation		PA levels Awareness, knowledge, and attitudes Physiological outcomes Psychological well-being Disease risk Health care utilisation	PA levels Awareness, knowledge, and attitudes Physiological outcomes Psychological well-being Disease risk Health care utilisation	PA levels Awareness, knowledge, and attitudes Physiological outcomes Psychological well-being Disease risk Health care utilisation

Figure 9: NERF Evaluation Framework – Optimal

Process Evaluation

Participant Characteristics

Rationale: To identify the extent to which the scheme reached the target population, including identifying who is offered referral, who takes it up, who adheres to it, and who drops out. This can be used to establish who the scheme is most appropriate for.

Measures: Demographics (including socioeconomic information), disease risk factors, reason for referral

Timepoint: Baseline

Methods: 1. Online questionnaire; 2. Online referral form

Personnel: 1. Participant; 2. Referring practitioner

Service Utilisation

Rationale: To identify the extent to which the scheme is being taken up and adhered to

Measures: Total number of referrals, who is making referrals, uptake rates, adherence rates, drop-out rates, number of follow-ups to drop-outs, and cost, including the referring practitioner time spent making referrals and the cost of the physical activity programme and costs for participants.

Timepoint: During the scheme

Methods: 1. Self-report, online questionnaire completion; 2. Electronic tagging of referral form; 3. Monitoring, e.g. electronic, automated, e.g. swipe card

Personnel: 1. Participant; 2. Referring practitioner; 3. Service provider

Scheme Fidelity

Rationale: To identify the extent to which the scheme was delivered as planned. Identifying differences in delivery across the scheme will assist in determining the potential impact of these differences on scheme effectiveness.

Measures: The number and content of initial participant-service provider consultations, the consistency in delivery of exercise session across centres, the amount of support provided to participants in the scheme, the physical activity options delivered, the plans for remaining active beyond the end of the scheme.

Timepoint: During the scheme

Methods: 1. Self-Evaluation; 2. Audit

Personnel: 1. Service Provider; 2. ERU

Participant Satisfaction

Rationale: Feedback on participant's experiences of the scheme will assist in understanding the factors affecting adherence and drop-out, which ultimately determine the effectiveness of the scheme.

Measures: Adapted REFERQUAL[8]

Timepoint: Upon scheme completion

Methods: Self-report, online questionnaire completion

Personnel: Participant supported/facilitated by service provider

Outcome Evaluation

Physical Activity Levels

Rationale: The primary aim of the NERF is to increase physical activity levels and improve health in individuals living with an established NCD or mental illness. Physical activity can be used as a proxy for health outcomes when resources are limited. Given the scientific evidence, improvements in a range of health outcomes may be inferred from increased physical activity levels.

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: Intensity, duration, frequency and type of physical activity e.g. IPAQ or pedometers/accelerometers (where resources allow)

Methods: Self-report, online questionnaire completion. Wear a motion sensor.

Personnel: Participant supported/facilitated by service provider

Awareness, Knowledge, and Attitudes

Rationale: Changes in PA may not occur in the short-term over the course of the scheme. Changes in awareness, knowledge, and attitudes are more likely over the short-term and may determine future intentions to change behaviour.

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: Self-report questionnaire, e.g. Stages of Change Questionnaire, Self-Efficacy for Exercise Scale, Social Support for Exercise Scale

Methods: Self-report, online questionnaire completion

Personnel: Participant supported/facilitated by service provider

[8] A 35-item self-report tool developed to assess the service quality of GP ERS

Physiological Outcomes

Rationale: Evaluation of risk factors such as BMI and blood pressure can provide useful information to the participant's health professional and be a source of motivation for participants. In addition, cardiorespiratory fitness is one of the best indicators of health [76].

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: 10 m incremental shuttle test, height, weight, waist circumference, blood pressure, lipids

Methods: Assessments facilitated at centre, facility, or programme

Personnel: Service provider and/or referring practitioner as required

Psychological Well-being (PWB)

Rationale: Evaluation of PWB outcomes can provide useful information to the participant's health professional and be a source of motivation for participants.

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: Psychological well-being, e.g. SF12, EQ-5D, WHOQOL-BREF

Methods: Self-report, online questionnaire completion

Personnel: Participant supported/facilitated by service provider

Disease Risk

Rationale: NERF participants are referred with a NCD or mental illness, therefore health outcomes, in addition to physical activity outcomes, are important for this population

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: Disease risk e.g. Framingham risk score, Qrisk, European HeartScore

Methods: Online questionnaire completion

Personnel: Referring practitioner

Healthcare Utilisation

Rationale: NERF participants are referred with a NCD or mental illness that is currently, or likely to in the future, impacting on healthcare utilisation. Evaluating changes in this utilisation will provide information on the cost effectiveness of the NERF.

Timepoint: Baseline, 12 weeks, 6 months, 12 months

Measures: GP visits, hospital admittance, medication use e.g. TILDA questionnaire

Methods: Self-report, online questionnaire completion

Personnel: Participant

Section 8:

Business Model

The Value Proposition

The NERF aims to offer exercise-based rehabilitation to Irish people with those chronic illnesses in which exercise has been shown to have a beneficial effect. Over one third (38%) of all Irish people and 62% of those over 65 years have a chronic illness [63]. The average number of co-morbidities is 2.4 for elderly patients with one chronic illness [77]. This amounts to a substantial (and growing) chronic illness cohort and a consequent enormous socioeconomic burden.

Most Irish people become less active with ageing [65,66,78]. This trend is much more marked in individuals with chronic illness. The result is that these patients become very deconditioned. Strength, aerobic capacity and flexibility are health-related fitness components which have a major impact on quality of life, morbidity and mortality. These health-related fitness components, as well as psychological wellbeing can improve dramatically with regular physical activity.

Many people with chronic illness (and their families) lack the knowledge, confidence and motivation to undertake independent physical activity. Supervised programmes provide regularity, routine, discipline, confidence and built-in social support and are, therefore, attractive to many patients, their families and referring health care professionals. The NERF aims to provide pathways to such programmes. In addition, the NERF should be inexpensive, accessible, cost-effective and evidence-based. Furthermore, once approval and funding is available it should be possible to develop and implement the NERF quickly because the network of necessary physical resources (e.g. exercise centres) already exists and many exercise centres are vacant for long periods every day. Centralised data generated by NERF will facilitate monitoring of outcomes and assist in the essential evaluation of the programmes' effectiveness. The provision of the NERF therefore makes perfect sense from a public health perspective as a chronic illness rehabilitation model.

The NERF also presents compelling partner value propositions. The chronic illness cohort is a massive 'community' with multiple potential partnership options that could be structured to support the programme delivery and enhance the participant experience.

Benefits will also be realised by referring practitioners and service providers, as they add to their service portfolio. Referring practitioners will benefit from readily available information and service providers in particular will benefit from increased client numbers.

In summary, the value proposition is that the the NERF offers a health intervention for chronic illness rehabilitation which is :

- effective regarding clinical and quality of life outcomes
- cost effective with regard to health care utilisation
- potentially easily and rapidly accessible (for the participant)
- amenable to evaluation
- supportive to health care professionals
- attractive to industry partners

Patient/Client Segments

The NERF is aimed at adults living with an established NCD or mental illness that would benefit from regular physical activity (which in effect is most NCDs). This is a large proportion of the Irish adult population (Table 5), especially in older age groups.

Cost Structure

There are three business model perspectives on the NERF, namely:

- Model 1: Health of the Nation model
- Model 2: Commercial model
- Model 3: Hybrid model

Model 1: Health of the Nation Model

This is the 'big picture' model where the NERF is viewed as good for society. It will improve the health of the nation and this will bring economic and other softer benefits which are well accepted but not easy to quantify. It is difficult in this context to define a full market value and to extract this value from the participant as a payment. Against this background it may be reasonable to allow the project to operate at a loss because of the understood benefits. In this model the concept of market failure is accepted, whereby the participant feels entitled to access the service free of charge (as is the case for example with education) and that the service is paid for through general taxation. One downside of this model is that it may lend itself to inefficient operational standards.

Model 2: Commercial Model

In this model a hard commercial approach is expected. The service is valuable to the participant and to associated partners. A mechanism is devised to extract the full value of the service from direct and indirect beneficiaries of the service. Operation efficieny and excellence is expected. A structure is put in place which ensures that the revenue exceeds the costs.

Model 3: The Hybrid Model

This model uses elements from each of the first 2 models. Operational excellence and efficiency is expected. The strict discipline of the commercial model is applied, but certain Health of the Nation concepts are embraced. This may increase the cost base and so revenue generated is reinvested in the project. Thus, for example, it may be important to strive for a rapid roll out nationally of the NERF and to facilitate easy access initially through cheaper participation costs.

It is proposed that the Hybrid Model approach shoud be adopted for the NERF roll out.

Costs Overview

There will be costs associated with the NERF at central (administration) and local (delivery) levels. At each level there will be set-up and recurring costs, and these recurring costs may be split between fixed and (semi) variable. Table 8 provides an overview of NERF costs. Indicative costings are provided in the case study at the end of this section.

Table 8: NERF Costs Overview

Location	Type	Details
Central	Set-Up	Awareness/marketing campaign Design and set-up of website Training for referring practitioners Training for service providers Set up of ERU Set up of evaluation mechanism Set up of referral process
	Recurrent	ERU costs National Clinical Lead cost Data management costs Evaluation costs Website management costs
Local	Set-Up	Publicity Initial staff training Centre accreditation Insurance equipment upgrades or modifications Repeat or new staff training
	Recurrent	Exercise instructors/physical activity leaders/facility charges Publicity Administration

Revenue Streams and Funding

Table 9 outlines the potential revenue streams to cover the NERF costs. It is important to address the issue of equity of access for low earners. Some of the listed potential revenue sources attempt to achieve this.

Table 9: NERF revenue streams and funding

	Source	Details
Participation Payment	Direct Participant Payment	• Rate per class/physical activity session • Differential rate for medical card holders
	Health Insurance	• Covers costs of member's confirmed participation
	Employer	• Covers costs of employee participation
	HSE	• Covers costs of medical card holder participation
	Revenue	• Allow costs against tax
	Social Welfare	• Cover/part cover costs for social welfare recipients
Commissioned Work	Industry partners	• Trialling technologies • Clinical trials
Access to the NERF Cohort	Industry partners	Access to NERF cohort for: • Scientific/medical information • Usage and attitudes information (using law of large numbers approach) • Targeted marketing and offering good value deals to the NERF particiopants
Other support	Industry partners	Contribute support to deliver on: • Community/social responsibility agenda • Profile enhancement/endorsement
Delivery Levy	Delivery Agent	• Licence fee • Profit share • Fee per referral

Channels

The NERF will replace the previously operating GPERP and will differ from it in a number of respects, including the access channels for participants. It is envisaged that a wide diversity of health care professionals may refer patients with NCDs or mental illness to the NERF. This, coupled with an efficient awareness campaign both for the potential referring health care professionals and the potential participants, will ensure a high level of referral activity.

It is important that the access pathways include self-initiation of referral, whereby a potential participant may request referral from one of the recognised referral sources. Within the NERF service, it is important to provide for mobility so that a participant may move from one level of support to another as his/her specific circumstances (health, social supports etc) change.

Awareness of NERF will be facilitated by a public education campaign using a range of conventional and social media strategies and by making information about NERF available through local community routes (religious, recreational and community suppport structures, local shops and pharmacies, local newslettters etc)

Client Relationships

The NERF should lead to the development of a new and interesting community of participants that will offer support to its membership. The project, if rolled out and supported, could create an attractive and viable platform from which various relationships could develop or strengthen that will enrich and enhance the participant experience. These relationships will include:

- One-to-one relationships between the service provider and the participant
- Relationships within the class or physical activity group and between the group and the service provider
- A vibrant NERF community will develop embracing participants at one centre and, via the website and other media, between centres
- Tangentially and indirectly involved providers, employers, referring health care professionals, HSE agents, NERF employees (such as the ERU team) will all interact with each other and with the participants in a unique NERF community

This rich network of interactions and relationships should facilitate uptake of, compliance with, adherence to, and enjoyment of the NERF scheme. Some of the new interactions for a participant (with fellow participants and with service providers) will occur several times per week while others (with the GP or hospital specialist) will be less frequent. Feedback and discussion about the programme and the participant's progress will be part of these interactions and will encourage sustained involvement.

Organisation, Governance and Key Activities

Delivery of a national programme will require the NERF to provide a focussed but mutually reinforcing set of leadership and support roles, i.e. "primary" and "support" activities.

Primary Activities

- **Governance**, to include management of the scheme and development of quality metrics

- **Training** of service providers and referring practitioners
- **Recruitment of participants,** to include marketing and awareness and data capture through the work of the ERU
- **Programme delivery**
- **Evaluation** of programme effectiveness

Support Activities

- **Organisation and reach,** ensuring that the required infrastructure is in place to deliver a national service
- **Human resources,** ensuring that the NERF workforce is managed in a way that optimises performance
- **Technology,** ensuring that effective sysytems are in place for participant data management and for capture of essential outputs
- **Marketing/awareness,** to ensure a consistent message is heard by all potential target participants, and that a consistent "brand" is developed

The blueprint for the operation of the NERF will be a network of local, front-line service provision sites (and related community based activities) supported by a single central support structure (the ERU). The primary and support activities will be distributed between the central and local structures.

Key Resources

Table 10 summarizes the key resources required for succesful implementation of the NERF.

Table 10: NERF Key Resources

Resource	Local	Central
Physical	• Facility • Exercise equipment • Safety equipment • Car parking	• Office space
Human	• Referring practitioners • Service providers • Medical support personnel	ERU: • Part-time national clinical lead • Full-time programme manager • Full-time support staff (estimated 2-3)
Intellectual	• Data management system	• Data management system • Website • Training programmes
Financial	• Funding for set up costs • Funding for running costs	• Funding for above

Key Partners & Suppliers

Consideration should be given to outsourcing some elements of the NERF. Key partners and suppliers (outside the core central NERF structure) will be identified in this context. Table 11 outlines the potential for key partners and suppliers, with suggested resource requirements.

Table 11: Key Partners and Suppliers

Partner	Local	Resource Requirement
Referral Network	• Create awareness among potential participants • Make the referral	• Training • Electronic referral system • Access to relevant participant clinical information • Participant information pamphlets
Delivery Network	• Deliver the physical activity interventions	• Training • Finincial support for initial employee training • Medical cover (for some centres)
Training Institutions	• Design and deliver appropriate training for referring and service providers	• Financial support for initial training programme design

A Case Study

In a hypothetical NERF centre, located in an academic institution, the facilities (exercise centre, equipment, changing area, parking), reception staff, heat and lighting, insurance etc. are already in place. This is central to the concept of exploiting available and currently under-utilised exercise centres for the purpose of rolling out the NERF.

Assumptions

The cost of running the programme in this centre is based on some key assumptions, namely:

- There will always be at least 2 instructors present, no matter how small the the class
- The maximum number of participants per instructor is 15
- The instructor pay rate is €14.50 per hour
- For a 1 hour class (including warm-up and cool-down), the instructors must be present for 2 hours (30 mins set up and 30 mins clean up/participant social coffee etc.)

- If 2 classes take place on a given day, they should run back to back, allowing 30 mins between the end of the first class and the start of the second (during which the first group has social coffee etc.) but not a second 30 min set-up period, so that the total time for each instructor is 3.5 hours. The instructor cost for a 2 class session is therefore €101.50 (2 x 3.5 x 14.5). The annual instructor cost (50 weeks, allowing 4 weeks paid holidays) for a 2 class session is €5,075. The correction for PRSI / pension (x 1.16) yields a cost of €5,887

- Classes will run for 46 weeks per year

- Participants will pay €6 (medical card) or €7 (non medical card)

- 30% of participants will have medical cards, so that for a class of 20 participants, the participant payment will be €134 ([6 x €6] + [14 x €7]). The annual revenue for 1 class per week (for 46 weeks) will be €6,164

- There will be a dedicated administrator whose commitment will depend on the no. of classes per week. The full time administrator salary is €25k (€29k incl pension / PRSI). The minimum requirement will be 1 day per week.

- For 4 classes per week, the administrator will work 1 day (annual cost €5,800)

- For up to 10 classes per week (5 days with 2 classes per day), the administrator will work 2.5 days (annual cost €14,500)

- For 20 classes per week , the admisitrator will work full time (annual cost €29,000).

- Catering (offering tea and coffee) will cost €0.25 per participant per visit (i.e. €5 per class for a class size of 20)

Scenarios

Table 12 summarises the revenue/cost balance for 4 different scenarios, assuming a class size of 20.

Table 12: Revenue and cost balance scenarios

Scenario (class size = 20)	Income (€)	Instructor Costs (€)	Admin Cost (€)	Catering (€)	Total Cost (€)	Balance (€)
4 classes/week (2 classes/day x 2 days)	24,656	11,774	5,800	920	18,494	+6,162
10 classes/week (5 x 2 class sessions)	61,640	29,435	14,500	2,300	46,235	+15,405
14 classes/week (7 x 2 class sessions)	86,296	41,209	29,000	3,220	73,429	+12,867
20 classes/week (10 x 2 class sessions)	123,280	58,870	29,000	4,600	92,470	+30,810

Other costs

The delivery centre will have other costs (Table 13). It is assumed the centre will already have an AED.

Item	Annual Cost (€)
Staff training	2,000
Staff clothing	500
First aid equipment use	300
Printing and local publicity	1,000
Total	3,800

Medical Cover

NERF centres that cater for Category A patients will require medical cover. In academic centres, there may be a physician on staff who takes responsibility for this role and who is fully funded by the insitution. A model that could provide no-cost medical cover for centres where this is not the case is to build the medical cover into the national GP training scheme network. In this model, GP training schemes would release trainee GPs on a sessional basis to attend the NERF centre and carry out a number of roles, including the provision of medical cover. The trainees would receive a relevant educational module before undertaking this role.

The advantages of involving GP trainees in the NERF to the GP trainees include:

- Gain experience and expertise in running an exercise referral system
- Become more likely to prescribe exercise to patients in their own practice
- Become more likely to refer their own patients into the NERF

Case Study Overview

The above case study demonstrates that a NERF centre could operate on a self-financing basis with more than 4 classes per week and offers a solution to the medical cover challenge.

Funding support for the ERU could come in part from a levy on participant visits in the local centres.

Section 9:

NERF Establishment

HSE Action Points

In order to facilitate the establishment of the NERF the HSE should:

1. Adopt the NERF as the national framework
2. Identify a source of funding for the NERF
3. Appoint the NERF National Manager
4. Establish the NERF Exercise Referral Unit
5. Make accessible any exercise referral training eModule to health professionals outside of HSELand
6. Facilitate the integration of a NERF electronic referral system with Healthlink
7. Integrate the NERF into other healthcare pathways by developing a mechanism whereby the NERF can be used as a pathway to other appropriate services
8. Commission an independent evaluation of the physical, mental, social, and economic impact of the NERF

ERU Action Points

Once appointed the ERU will lead on the development and implementation of the NERF. In particular the NERF National Clinical Lead and National Programme Manager should form the leadership team to drive the development of the NERF. In order to facilitate the establishment of the NERF the ERU must:

- Oversee the development, review, and delivery of training for service providers by:
  - Engaging and monitoring REPs Ireland in the development of PA service provider standards to deal with Category A and B participants
  - Engaging a higher education institution to subject the development of service provider standards to an external verification process
  - Supporting REPs Ireland to accredit and categorize appropriate programmes of public or private educational providers
- Oversee the development, review, and delivery of training for referring practitioners by:
  - Reviewing the HSE health professional eLearning module and updating with NERF specific content
  - Seeking accreditation of the eModule for CPD from other health professional representative bodies
  - Assisting in the integration of exercise referral training into the pre-service curriculum on any vocational programme related to healthcare

- Promote the NERF by engaging in a knowledge exchange with potential referring practitioners and service providers
- Recruit referring practitioners and service providers
- Generate and maintain a database of referring practitioners and service providers
- Develop a self-certification tool for referring practitioners and service providers
- Formulate and agree MOU with referring practitioners and service providers
- Assist primary care centres and academic institutions to establish NERF centres
- Adapt existing evidence-based/informed self-directed programmes incorporating diverse and emerging methods of mHealth
- Compile and distribute, in both hard copy and e-format, a NERF pack for referring practitioners to include implementation resources such as inclusion-exclusion guidelines, referral form, informed consent forms, BI pamphlets, and evaluation tools
- Compile and distribute, in both hard copy and e-format, a NERF pack for service providers to include implementation resources such as initial consultation checklist, informed consent forms, and evaluation tools
- Use the business model to develop a business case for the NERF
- Identify a cost-effectiveness outcome measure for the NERF from the business case
- Establish the participant online evaluation questionnaire

Section 10:

Future Development

Following implementation of the NERF as outlined within this framework, the following are the recommendations for future development:

1. For full implementation of the PAPHM, the HSE should develop an implementation plan for the delivery of brief advice and brief intervention, including training for health professionals.

2. The HSE should advocate for the use of 'exercise as a vital sign' by health professionals and 'making every contact count'.

3. The NERF provides an opportunity to contribute to international knowledge of the role of exercise referral in the secondary prevention and management of NCDs. The NERF data should be made available to inform future practice.

4. The NERF should be continuously updated in line with evidence/best practice

5. To increase equity of access, the NERF should consider the inclusion of self-initiation of referral through the completion of an online risk stratification and suitability tool monitored by the ERU.

6. The potential of expanding the scheme to include children should be investigated.

7. The HSE should advocate for the development of national sedentary behaviour guidelines and ultimately incorporate the reduction of sedentary behaviour into the aim of the NERF.

8. The HSE should advocate for the integration of exercise referral training in the curriculum of any vocational programme related to healthcare.

9. The NERF communication strategy should invest in a broad range of methods including public education campaigns, role models, and peer networks

10. A NERF mobile 'App' should be developed to facilitate electronic referrals of non-desk based referring practitioners and to facilitate evaluation data collection for participants, referring practitioners, and service providers

References

1. National Institute of Health and Clinical Excellence. *A rapid review of the effectiveness of brief interventions in primary care to promote physical activity in adults*. (NICE, 2006).

2. Murphy, S. M. *et al*. An evaluation of the effectiveness and cost effectiveness of the National Exercise Referral Scheme in Wales, UK: a randomised controlled trial of a public health policy initiative. *J. Epidemiol. Community Health* 66, 745–53 (2012).

3. Campbell, F. *et al. A systematic review and economic evaluation of exercise referral schemes in primary care : A short report*. (2014).

4. Bull, F. C. & Milton, K. E. A process evaluation of a 'physical activity pathway' in the primary care setting. *BMC Public Health* **10**, 463 (2010).

5 Boehler, C. E. H., Milton, K. E., Bull, F. C. & Fox-Rushby, J. A. The cost of changing physical activity behaviour: evidence from a 'physical activity pathway' in the primary care setting. *BMC Public Health* **11**, 370 (2011).

6. Council of the European Union. *Council Recommendation on promoting health-enhancing physical activity across sectors*. (2013).

7. World Health Organisation. ResolutionWHA57.17. Global Strategy on Diet, Physical Activity,and Health. in *Fifty-seventy World Heal*. Assem. Geneva, 17-22 May 2004 (2004).

8. World Health Organisation. *2008–2013 Action Plan for the Global Strategy for the Preventionand Control of Noncommunicable Diseases*. (2008).

9. United Nations General Assembly. *Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases*. (2011).

10. http://www.euro.who.int/en/health-topics/health-policy/health-2020-the-european-policy-for-health-and-well-being.

11. World Health Organisation Europe. Vienna Declaration on Nutrition and Noncommunicable Diseases in the Context of Health 2020. *in WHO Minist. Conf. Nutr. Noncommunicable Dis. Context Heal. 2020* (2013).

12. World Health Organisation. *Global Status Report on Noncommunicable Diseases 2014*. (2014).

13. *Department of Health. Get Ireland Active! National Physical Activity Plan for Ireland. 2016.* (download at: http://health.gov.ie/wp-content/uploads/2016/01/Get-Ireland-Active-the-National-Physical-Activity-Plan.pdf)

14. Department of Education and Skills. *Get Active: Physical Education , Physical Activity and Sport for Children and Young People: A Guiding Framework.* (2012).

15. Department of Children and Youth Affairs. *Better Outcomes, Brighter Futures: The national policy framework for children and young people 2014-2020.* (2014).

16. Department of Transport. *Smarter Travel:A Sustainable Transport Future. A New Transport Policy for Ireland 2009-2020.* (2009).

17. *Positive Ageing - Starts Now! The National Positive Ageing Strategy.* (2013).

18. Wen, C. P. & Wu, X. Stressing harms of physical inactivity to promote exercise. *Lancet* **380**, 192–3 (2012).

19. Global Advocacy Council for Physical Activity. The Toronto Charter for Physical Activity: A Global Call for Action. *J. Phys. Act. Health* **7 Suppl 3**, S370–85 (2010).

20. MORRIS, J. N., HEADY, J. A., RAFFLE, P. A., ROBERTS, C. G. & PARKS, J. W. Coronary heart-disease and physical activity of work. *Lancet* **265**, 1053–7; contd (1953).

21. Paffenbarger, R. S., Hyde, R. T., Wing, A. L. & Hsieh, C. C. Physical activity, all-cause mortality, and longevity of college alumni. *N. Engl. J. Med.* **314**, 605–13 (1986).

22. Paffenbarger, R. S., Brand, R. J., Sholtz, R. I. & Jung, D. L. Energy expenditure, cigarette smoking, and blood pressure level as related to death from specific diseases. *Am. J. Epidemiol.* **108**, 12–8 (1978).

23. Blair, S. N. *et al.* Physical fitness and all-cause mortality. A prospective study of healthy men and women. *JAMA* **262**, 2395–401 (1989).

24. Lee, I. M. & Paffenbarger, R. S. Associations of light, moderate, and vigorous intensity physical activity with longevity. The Harvard Alumni Health Study. *Am. J. Epidemiol.* **151**, 293–9 (2000).

25. Lee, I. M., Hsieh, C. C. & Paffenbarger, R. S. Exercise intensity and longevity in men. The Harvard Alumni Health Study. *JAMA* **273**, 1179–84 (1995).

26. Wannamethee, S. G., Shaper, A. G. & Walker, M. Changes in physical activity, mortality, and incidence of coronary heart disease in older men. *Lancet* **351**, 1603–8 (1998).

27. Macera, C. A., Hootman, J. M. & Sniezek, J. E. Major public health benefits of physical activity. *Arthritis Rheum.* **49**, 122–8 (2003).

28. Myers, J. *et al.* Fitness versus physical activity patterns in predicting mortality in men. *Am. J. Med.* **117**, 912–8 (2004).

29. Chief Medical Officers. *Start active, stay active: a report on physical activity from the four home countries.* (2011).

30. World Health Organisation. *Global Recommendations on Physical Activity for Health.* (2010).

31. Blair, S. N. et al. Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all-cause mortality in men and women. *JAMA* **276**, 205–10 (1996).

32. Biddle, S. J. H., Cavill, N., Ekelund, U. & et al. *Sedentary Behaviour and Obesity: Review of the Current Scientific Evidence.* (2010).

33. Heran, B. S. et al. Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane database Syst. Rev.* CD001800 (2011). doi:10.1002/14651858.CD001800.pub2

34. Fagard, R. H. & Cornelissen, V. A. Effect of exercise on blood pressure control in hypertensive patients. *Eur. J. Cardiovasc. Prev. Rehabil.* **14**, 12–7 (2007).

35. Watson, L., Ellis, B. & Gc, L. Exercise for intermittent claudication (Review). *Library (Lond).* (2008).

36. Lloyd-Williams, F., Mair, F. S. & Leitner, M. Exercise training and heart failure: a systematic review of current evidence. *Br. J. Gen. Pract.* **52**, 47–55 (2002).

37. Lacasse, Y. *et al.* Pulmonary rehabilitation for chronic obstructive pulmonary disease. Cochrane database Syst. Rev. CD003793 (2002). doi:10.1002/14651858.CD003793

38. O'Gorman, D. J. & Krook, A. Exercise and the treatment of diabetes and obesity. *Med. Clin. North Am.* **95**, 953–69 (2011).

39. Mann, S., Beedie, C. & Jimenez, A. Differential effects of aerobic exercise, resistance training and combined exercise modalities on cholesterol and the lipid profile: review, synthesis and recommendations. *Sports Med.* **44**, 211–21 (2014).

40. Boulé, N. G., Haddad, E., Kenny, G. P., Wells, G. A. & Sigal, R. J. Effects of exercise on glycemic control and body mass in type 2 diabetes mellitus: a meta-analysis of controlled clinical trials. *JAMA* **286**, 1218–27 (2001).

41. Häuser, W. *et al.* Efficacy of different types of aerobic exercise in fibromyalgia syndrome: a systematic review and meta-analysis of randomised controlled trials. *Arthritis Res. Ther.* **12**, R79 (2010).

42. Bonaiuti, D. *et al.* Exercise for preventing and treating osteoporosis in postmenopausal women. *Cochrane database Syst. Rev.* CD000333 (2002). doi:10.1002/14651858.CD000333

43. Scarvell, J. & Elkins, M. R. Aerobic exercise is beneficial for people with rheumatoid arthritis. *Br. J. Sports Med.* **45**, 1008–9 (2011).

44. Uthman, O. A. *et al.* Exercise for lower limb osteoarthritis: systematic review incorporating trial sequential analysis and network meta-analysis. *BMJ* **347**, f5555 (2013).

45. Ibrahim, E. M. & Al-Homaidh, A. Physical activity and survival after breast cancer diagnosis: meta-analysis of published studies. *Med. Oncol.* **28**, 753–65 (2011).

46. Lawlor, D. A. & Hopker, S. W. The effectiveness of exercise as an intervention in the management of depression: systematic review and meta-regression analysis of randomised controlled trials. *BMJ* **322**, 763–7 (2001).

47. NHS Health Scotland. *Working Paper Evidence Section: Physical Activity for Health*.

48. Kelleher, C., Hickey, A., Conroy, R. & Doyle, F. *Does pain mediate or moderate the relationship between physical activity and depressive symptoms in older people?* (2013).

49. Hallal, P. C. *et al.* Global physical activity levels: surveillance progress, pitfalls, and prospects. *Lancet* **380**, 247–57 (2012).

50. Irish Sports Council. *Data Presented to the Healthy Ireland National Physical Activity Planning Group*. (2013).

51. World Health Organisation. *Global Health Risks: Mortality and burden of disease attributable to selected major risks*. (2009).

52. Lee, I.-M. *et al.* Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* **380**, 219–29 (2012).

53. World Health Organisation. *Global Health Risks: Mortality and burden of disease attributable to selected major risks*. (World Health Organization, 2009). at <http://www.who.int/mediacentre/factsheets/fs385/en/>

54. Jennings, S. M. *Preventing chronic disease: defining the problem.* (Health Service Executive (HSE), 2014). at <http://www.lenus.ie/hse/handle/10147/338212>

55. Global Advocacy Council for Physical Activity (GAPA) the Advocacy Council of the International Society for Physical Activity and Health (ISPAH). *NCD Prevention: Investments that Work for Physical Activity.* (2011).

56. The Scottish Goverment Health Delivery Directorate Improvement and Support Team. *Proactive, Planned and Coordinated: Care Management in Scotland.* (2010).

57. National Institute of Health and Clinical Excellence. *Four commonly used methods to increase physical activity.* (2006).

58. NICE. *Exercise Referral Scheme to Promote Physical Activity.* (2014).

59. National Institute of Health and Clinical Excellence. *Exercise referral schemes to promote physical activity.* (2014).

60. Pavey, T. G. *et al.* The clinical effectiveness and cost-effectiveness of exercise referral schemes: a systematic review and economic evaluation. *Health Technol. Assess.* **15**, i–xii, 1–254 (2011).

61. Gidlow, C., Johnston, L. H., Crone, D. & James, D. Attendance of exercise referral schemes in the UK: A systematic review. *Health Educ. J.* **64**, 168–186 (2005).

62. Hammond, J. M., Brodie, D. A. & Bundred, P. E. Exercise on prescription : guidelines for health professionals. *Health Promot. Int.* **12**, 33–41 (1997).

63. Health Service Executive. *Health Status of the Population of Ireland.* (2008).

64. Irish Universities Nutrition Alliance (IUNA). *NationalAdultNutritionSurvey. Summaryreportonfoodandnutrient intakes, physical measurements, physical activity patterns and food choice motives.* (2011).

65. Morgan, K. *et al. SLAN 2007: Survey of Lifestyle, Attitudes and Nutrition in Ireland: Main Report.* (2008).

66. Barrett, A., Savva, G., Timonen, V. & Kenny, R. *Fifty Plus in Ireland 2011. First results from the Irish Longitudinal Study on Ageing (TILDA).* (2011).

67. The Irish Sports Council. *The Irish Sports Monitor.* (2013).

68. Office of Tobacco Control. *Children, Youth and Tobacco: Behaviour, Perceptions and Public Attitudes.* (2006).

69. Irish Association of Cardiac Rehabilitation & The Irish Heart Foundation. *National Survey of Cardiac Rehabilitation Services 2013.* (2013).

70. *Kokko, S. et al. Sports Club for Health: Guidelines for health-oriented sports activities in a club setting.* (2011).

71. Mutrie, N. *et al.* Increasing older adults' walking through primary care: results of a pilot randomized controlled trial. *Fam. Pract.* **29**, 633–42 (2012).

72. Heron, N., Tully, M. a, McKinley, M. C. & Cupples, M. E. Steps to a better Belfast: physical activity assessment and promotion in primary care. *Br. J. Sports Med.* (2013). doi:10.1136/bjsports-2012-091581

73. British Heart Foundation National Centre for Physical Activity & Health. *A Toolkit for the Design, Implementation and Evaluation of Exercise Referral Schemes: A guide to evaluating exercise referral schemes.* (2010).

74. National Health Service. *Exercise Referral Systems: A National Quality Assurance Framework.* (2001).

75. WHO European Working Group on Health Promotion Evaluation. *Health Promotion Evaluation: Recommendations to Policy-Makers.* (1998).

76. Kodama, S. *et al.* Cardiorespiratory fitness as a quantitative predictor of all-cause mortality and cardiovascular events in healthy men and women: a meta-analysis. *JAMA* **301**, 2024–35 (2009).

77. Islam, M. M. *et al.* Multimorbidity and comorbidity of chronic diseases among the senior Australians: prevalence and patterns. *PLoS One* **9**, e83783 (2014).

78. Murtagh, E. M. *et al.* Prevalence and correlates of physical inactivity in community-dwelling older adults in ireland. *PLoS One* **10**, (2015).


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Appendices

Appendix A: NERF Advisory Panel

Health Sector

Surname	Forename	Organisation
Barry	Catriona	Insititute of Community Health Nursing
Blake	Catherine	Irish Society of Chartered Physiotherapists
Bradley	Catriona	Irish Institute of Pharmacy
Brolly	Colette	Public Health Agency for Northern Ireland
Brosnan	Ailis	Physical Activity Co-ordinator, HSE
Castles	Gay	Assistant Deputy Physiotherapy Manager, CUH, HSE
Cavanagh	Brendan	ACS Programme Manager, HSE
Conway	Mary	Colorectal Cancer Nursing, Beaumont Hospital, HSE
Crosse	Ann Marie	Green Prescription, HSE
Doogue	Roisin	Irish Practice Nurses Association
Eldin	Nazih	Health Promotion Dublin North East, National Lead on Obesity, HSE
Fitzgerald	Mella	Irish Nurses Cardiovascular Association
Fitzpatrick	Sinead	National Clinical Programme for Palliative Care, HSE
Gallagher	Anne	The Mater Hospital: Cardiac Rehabilitation, HSE
Hartigan	Cate	Health Promotion and Improvement, Health & Wellbeing Division, HSE
Hayes	Ger	Irish College of General Practitioners
Humphreys	Margaret	Irish Nutrition and Dietetics Institute
Jennings	Siobhan	Consultant Public Health Medicine, Department of Public Health, HSE
Kennedy	Roisin	ANÁIL
McQuade	Sean	Active Belfast, Belfast Health Development Unit
Murphy	Katie	Diabetes in General Practice
Newton	Helen	Beaumont Hospital: Cardiac Rehabilitation, HSE
O'Connor	Marie	National Clinical Programme for COPD, HSE
O'Donoghue	Grainne	Dexlife, DCU
O'Flaherty	Kate	Director of Healthy Ireland, Health & Wellbeing Programme, Department of Health
O'Keefe	Stephanie	National Director of Health and Wellbeing Division, HSE
O'Neill	Margaret	Senior Community Dietitian, HSE
O'Reilly	Orlaith	National Clinical Advisor & Group Programme Lead, Health & Wellbeing, HSE
O'Shea	Donal	Consultant Endocrinologist, HSE
Peppard	Caroline	Physical Activity Co-ordinator, HSE
Sheeran	Padraig	Faculty of Sport and Exercise Medicine, RCSI
Tighe	Marie	National Clinical Programme for Diabetes, HSE
Tinnelly	Mary	Association of Occupational Therapists of Ireland
Toomey	Ronan	Healthy Ireland, Department of Health
Vasquez	Sine	Senior Oncology Pysiotherapist, Beaumont Hospital, HSE

Non-health Sector

Surname	Forename	Organisation
Caprani	Niamh	Insight Centre for Data Analytics, DCU
Carty	Catherine	Institute of Technology Tralee
Claffey	Marian	Irish Association of Cardiac Rehabilitation
Clarke	Emmajane	Irish Sports Council
Clements	David	National Transport Authority
Connolly	Regina	Health Technologist, DCU
Denyer	Sean	Department of Children and Youth Affairs
Dineen	Joan	GP Exercise Referral Programme
Farrelly	Annmarie	County Councils
Flanagan	Pat	Adapted Physical Activity Specialist
Jones	Jenny	CROI
Kealy	Rosarie	Local Sports Partnership
Maloney	Christine	Ireland Active
Martin	Antonia	Dublin City Council, FitLine
Mc Manus	Mark	REPs Ireland
McCluskey	Conn	Federation of Irish Sport
Moyna	Niall	Dublin City University
Mullen	Deidre	Leisure Center Manager and Local Coordinator of GPERP
Mullin	Martina	Age and Opportunity, FitLine
Mulvihill	Maureen	Irish Heart Foundation
Murphy	Niamh	Waterford Institute of Technology
Murtagh	Elaine	Mary Immaculate College
O'Connor	Noel	Insight Centre for Data Analytics, DCU
O'Gorman	Donal	Dublin City University
O'Hagan	Kevin	Irish Cancer Society
O'Leary	Emer	DCU Sport, PhD Candidate
O'Leary	Grainne	Athritis Ireland
O'Reilly	Carol	Department of Transport, Tourism, and Sport
Quinn	Grainne	Get Ireland Walking
Smeaton	Alan	Director, Insight Centre for Data Analytics, DCU
Staines	Anthony	Health Economist, DCU
Sweeney	Myles	Local Sports Partnership

Appendix B: Specialists Consulted in the Development of the NERF Inclusion Guidelines

Specialist	Organisation
Mr. Declan Bowler	Consultant Orthopaedic Surgeon, Mater Private Clinic, Cork
Prof. Richard Costello	Consultant Respiratory Physician, Beaumont Hospital
Prof. Kieran Daly	National Clinical Lead, HSE Acute Coronary Syndrome Programme
Prof. Ted Dinan	Professor of Psychiatry, University College Cork & Cork University Hospital
Prof. Oliver Fitzgerald	National Clinical Lead, HSE Rheumatology Programme
Dr. Joe Galvin	Consultant Cardiologist, Mater Private Clinic
Dr. Donough Howard	Consultant Rheumatologist, Beaumont Hospital
Prof. Peter Kelly	National Clinical Lead, HSE Stroke Programme
Prof. Tim Lynch	National Clinical lead, HSE Neurology Programme
Dr. Conor McCarthy	Consultant Rheumatologist, Mater Misericordiae Hospital
Prof. Tim McDonnell	National Clinical Lead, HSE COPD Programme
Dr. Liam Plant	National Clinical Director, National Renal Office HSE & Consultant Renal Physician, Cork University Hospital
Dr. John Sheehan	Consultant Psychiatrist, Mater Misericordiae Hospital
Dr. Diarmuid Smith	Consultant Endocrinologist, Beaumont Hospital

Appendix C: Physical Activity Screening Questionnaire

Physical activity can be performed at different intensities.

VIGOROUS intensity physical activity: The effort makes your heart beat much faster and you have to breathe deeper and faster than normal. You will probably sweat.

MODERATE intensity physical activity: The effort makes you warmer and your heart rate and breathing rate will be faster than normal. You may also sweat a little, but will still be able to carry on a conversation.

For these next series of questions include the number of days you were active or add up all the time you spend doing Physical Activity each day. Please include ONLY activities of either Moderate or Vigorous intensity.

1. Over a typical or usual week, on how many days are you physically active at a MODERATE or VIGOROUS intensity for a total of AT LEAST 30 MINUTES per day? Please tick one.

0	1	2	3	4	5	6	7

2. If 4 days or less, have you done at least 2½ hours (150 minutes) of physical activity over the course of the past week? Please tick one.

Yes	No

3. Which of the following three statements best describes you? Please tick one.

You are not regularly physically active and do not intend to be in the next 6 months.	Pre-contemplation
You are not regularly physical active but are thinking about becoming more active in the next 6 months.	Contemplation
You do some physical activity but not enough to meet the description of regular physical activity given above.	Preparation

Adapted from the Scottish Physical Activity Screening Questionnaire.

Appendix D: Expert Symposium

An Expert Symposium was held at Dublin City University on the 19th June 2014. The purpose of the symposium was to (i) have international experts outline their country's current practice in relation to exercise referral, and (ii) advise us on how Ireland can best set up a NERF and (iii) continue with the NERF consultation process with the advisory panel informed by both feedback from preliminary interviews with the panel and the speakers input.

Five international experts on physical activity and public health and exercise referral were invited to attend the symposium. The symposium was attended by the advisory panel and invited guests. Attendees were from both health (N=32) and non-health (N=26) professions and organizations. The day had an interactive format where attendees were invited to listen to international speakers and then participate in round table discussions and a knowledge exchange.

The International Expert presentations were as follows:

Prof. Fiona Bull, MBE – Getting Ireland Active: Physical health and well-being for life

Mr. Malcolm Ward – Wales National Exercise Referral Scheme

Ms. Kim Buxton – Exercise Referral Schemes: England

Dr. Minna Aittasalo – Examples of Exercise Referral from Scandinavia

Dr. Brian Martin – Promotion of Physical Activity in Primary Care Setting: A European Perspective

Following the expert presentations and a presentation on the initial feedback from the consultation interviews with the advisory panel prior to the symposium, attendees and speakers were invited to join in round table discussions chaired by NERF working group members. At these roundtables attendees were asked:

"After Listening to the Keynote Speaker, the Expert Panel and hearing the feedback from the initial consultation process on the Outline Framework… please share with the group ***one reflection*** *that you have"*

The second interactive session involved a world café/ knowledge exchange format whereby each working group member facilitated a discussion on a key question at a flipchart 'station'. Groups spent 15 min at each question. A summary of the information collected at these sessions was presented to the advisory panel before the close of the symposium. The following section outlines the key questions posed and a summary of the feedback received.

World Café 1: Referral System 1

- In the proposed framework there are 3 categories for referral:
  a. Those with severe chronic illness
  b. Those with definite, though mild, chronic illness
  c. Those who do not have established chronic illness, but are deemed at risk, e.g. pre-diabetics
  Do we need all of these categories?
- If yes, how do we narrow the inclusion criteria for category C?

World Café 2: Referral System 2

- In the proposed framework there are 3 categories for referral:
  a. Those with severe chronic illness
  b. Those with definite, though mild, chronic illness
  c. Those who do not have established chronic illness, but are deemed at risk, e.g. pre-diabetics
  What categories would you be happy to refer or accept a referral from?
- What level of medical support, if any, should apply to categories A, B, and C?

World Café 3: Referral Process

- Is the referring practitioners list complete? Should all referring practitioners have the same referral power?
- How should self-initiation of the referral process be incorporated into the NERF?

World Café 4: Funding, Governance and a Business Model

- Who should be responsible for managing a National Exercise Referral Programme?
- Considering the current economic constraints, how would you suggest that the NERF is funded?
  a. Participant pay full amount
  b. HSE pays full amount or full amount for medical card holders
  c. Private health insurer
  d. Private business partner
  e. Other…?

World Café 5: Monitoring and Evaluation

- How should the NERF, its referral system, and service provision be evaluated?

World Café 6: Training and Qualifications

- What training should be offered to NERF referring practitioners and service providers?

World Café 7: Programme Structure

- How long should an exercise referral programme run?
- What type of programmes should be offered? Structured group exercise, lifestyle PA, home-based programme, mHealth programme…

Appendix E: Role and Responsibilities of the Exercise Referral Unit

Roles and Responsibilities of the National Manager	
Manage	• To manage and coordinate the efficient implementation of the NERF • To monitor and manage the national budget for the NERF • To coordinate future development of the NERF
Develop	• To develop and disseminate clear and easily interpretable guidelines for referring practitioners and service providers in terms of their roles, responsibilities, and training requirements • To put in place and monitor MOUs with referring practitioners and service providers to agree to implement NERF protocols and procedures • To oversee the timely development, review and delivery of referring practitioner and service provider training • To develop and manage appropriate informed consent and data handling procedures for the NERF in line with HSE policies and procedures and meeting statutory requirements regarding data protection
Monitor	• To monitor and evaluate the NERF • To manage and evaluate the work of the ERU support staff
Communicate & Promote	• To develop and monitor a communication strategy to allow knowledge exchange within the NERF • To undertake the marketing and national communication of the NERF • To liaise with National Clinical Programme Leads • To liaise with the national coordinators of associated programmes such as the national PA coordinators, LSP Network, Local Authorities and non-governmental charity and advocacy groups • To liaise with other referral programmes within the HSE, e.g. Stanford Self Management Programme

Roles and Responsibilities of the ERU Support Staff	
Screen	• To assist referring practitioners in understanding patients medical needs in relation to physical activity • To assist referring practitioners in building their skills at matching referred patients to an appropriate, convenient, and relevant programme • To control the distribution of service providers to referring practitioners • To potentially provide support and training to volunteer advocates • To provide support to referring practitioners and service providers on the monitoring and evaluation of programmes • To understand the NERF pathways and exit strategies for patients • To provide support in the development of the training standards for service providers
Refer	• In cases of uncertainty, to take referrals from the referring practitioner and match the patient to a suitable local service provider • To obtain relevant medical information from the patient's GP through Healthlink when this information is not supplied with the referral
Manage	• To promote the NERF by engaging in a knowledge exchange with potential referring practitioners and service providers • To liaise with the national NERF manager and work closely with them on meeting the national objectives
Monitor	• To manage a database of referrals • To manage a database of registered referring practitioners • To manage a database of registered service providers • To review self-certification forms from referring practitioners • To review self-certification forms and self-report annual audits from service providers • To perform random onsite inspections of service providers • To monitor compliance with operating protocols and procedures
Review	• To perform audits of the NERF to ensure it is line with evidence/best practice • To produce regular reports on the NERF status • To produce regular reports on NERF evaluation framework findings • To produce publications to contribute to international knowledge of ER

Appendix F: NERF Inclusion Guidelines

GENERAL CRITERIA FOR REFERRAL TO THE SERVICE

- Clinically stable
- Able to monitor and regulate the intensity of their activity
- Able to recognize their optimum level of exercise intensity
- Able to acknowledge the importance of and demonstrate a commitment to modifying risk-related behaviour
- Able to sit in a seat independently (time unlimited)
- Ambulant and able to mobilize more than 5 m with or without a walking stick, independently or supervised
- Adequate communication strategies for those with aphasia to allow participation

Note: Patients not meeting these criteria require one-to-one rehabilitation, which should continue to be provide by current services, e.g. physiotherapist services

WITH REGARD TO GROUP B PATIENTS

Patients with functional capacity levels 1-2 may attend community based elements of the service (i.e. walking groups etc), while patients with functional level 3-4 are advised to attend (initially at least) centres (i.e. exercise facilities) with supervised options

Functional Level 1: Illness diagnosed, but not interfering in any way with normal activities

Functional Level 2: Can carry out all normal activities, but with symptoms

Functional Level 3: Can carry out some but not all normal daily activities (independently) because of symptoms

Functional Level 4: Can carry out very few normal daily activities independently because of symptoms

Note: The listing below is to provide general guidelines. It may not be complete and clinical judgement may always be applied in deciding where to refer patients.

CONDITION	GROUP A	GROUP B
Rheumatology	• Rheumatoid arthritis (or other connective tissue disease) with lung involvement or associated significant cardiovascular disease	• Rheumatological conditions not included in Category A
Cardiovascular Disease	• Stable angina • Stable chronic heart failure • Stable valvular heart disease • Implanted cardiovertor defibrillator with history of cardiac arrest	• Post non-recent (> 2months) percutaneous coronary intervention (with or without prior cardiac event) • Post non-recent (>6 months)

CONDITION	GROUP A	GROUP B
	• Pre cardiac transplant without absolute contraindications • Post cardiac transplant • Stable cardiomyopathy • Stable cardiac arrhythmia • NYHA Risk Stratification 2-3 • Post recent (i.e.< 2 months) percutaneous coronary intervention (with or without prior cardiac event) • Post recent (<6 months) cardiac surgery • Severe arterial hypertension (i.e. systolic BP of >170mm Hg and/or a diastolic of BP of >100mm Hg) at rest • Post-myocardial infarction (to hospital based Phase 3 Rehabilitation) • Long Q-T syndrome	• Permanent pacemaker • Those identified as suitable for transfer to Phase IV by Phase III assessment and risk stratification • Hypertension (systolic BP of >140 mmHG and <170 mmHg, diastolic BP >90 mmHg and <100 mmHG) • Post myocardial infarction on referral from Phase 3 programme • Implanted cardioverter defibrillator without history of cardiac arrest
Pulmonary disease	• COPD GOLD Stage 3-4 • Any patient using supplemental oxygen • Any patient with pulmonary fibrosis • Any patient with pulmonary hypertension • Any patient pre or post lung transplant • Any patient with lung cancer (pre or post treatment) • Severe unstable asthma • Unexplained multifactorial dyspnea • Cystic fibrosis	• Established pulmonary disease significantly affecting (or likely to affect) quality of life
Diabetes	• Recent (within past 6 months) documented cardiovascular disease event (e.g infarction) or procedure (i.e. stenting) • Established autonomic or peripheral neuropathy • Documented hypoglycaemia unawareness • History of recurrent severe hypoglycaemia • Diabetic retinopathy • Recent (within past year) laser or intra-vitreal injection treatment of eye complications • Diabetic nephropathy	• Type 1 or Type 2 diabetes, excluding those cases listed in Category A • Pre-diabetes, i.e. impaired fasting glucose (fasting plasma glucose ≥5.55 mmol/L and ≤6.94 mmol.L-1) or impaired glucose tolerance (2 h values in oral glucose tolerance test ≥7.77mmol.L-1 and ≤11.04 mmol.L-1)

CONDITION	GROUP A	GROUP B
Stroke	• No specific stroke related requirement for high support, once period of stroke evolution / resolution has passed	• Most stroke patients could attend low support centres
Neurological conditions	• Autonomic dysfunction, autonomic neuropathy or multi-system atrophy with risk of exercise induced autonomic collapse • Severe or atypical Parkinsons or motor neuron disease with falls risk	• Chronic neurological conditions impacting on QoL and not listed in Category A
Orthopaedic	• Moderate to severe OA with co-morbidities	• Moderate to severe OA that is impacting on QoL

Renal Disease	• Chronic or end stage kidney disease (GFR below 30 mls/min with either
	  ○ Cardiac co-morbidity
	  ○ Hb <10g/dl (not corrected by EPO)
		• Chronic or end stage renal disease without cardiac comorbidity or anaemia uncorrected by EPO

Obesity		• Obese individuals who are not already included based on comorbidities and Category 2 of Edmonton Obesity Staging System (EOSS)
Mental illness	• Significant panic disorder • Long Q-T syndrome (related to use of some neuroleptic medication)	• Most mental illness patents who are mentally stable and willing to participate could attend low support centres

Exclusion criteria

<18 years of age
Currently physically active (i.e. ≥30 min of moderate physical activity on 5 d.week^{-1})
Absolute contraindications to exercise[9]
- A recent significant change in the resting ECG suggesting significant ischaemia, recent myocardial infarction (within 2 days) or other acute cardiac event
- Unstable angina
- Uncontrolled cardiac dysrhythmias causing symptoms or hemodynamic compromise
- Symptomatic severe aortic stenosis
- Uncontrolled symptomatic heart failure
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis or pericarditis
- Suspected or known dissecting aneurysm
- Acute systematic infection, accompanied by fever, body aches, or swollen lymph glands

Relative contraindications to exercise*
- Left main coronary stenosis
- Moderate stenotic valvular heart disease
- Electrolyte abnormalities (e.g. hypokalemia, hypomagnesemia)
- Severe arterial hypertension (i.e. systolic BP of >200mm Hg and/or a diastolic of BP of >110mm Hg) at rest
- Tachydysrhythmia or bradydysrhythmia
- Hypertrophic cardiomyopathy and other forms of outflow tract obstruction
- Neuromuscular, musculoskeletal, or rheumatoid disorders that are exacerbated by exercise
- High-degree atrioventricular block
- Ventricular aneurysm
- Uncontrolled metabolic disease (e.g. diabetes, thyrotoxicosis, or myxedema)
- Chronic infectious disease (e.g. mononucleosis, hepatitis, AIDS)
- Mental or physical impairment leading to inability to exercise adequately

* Relative contraindications can be superseded if benefits outweigh risks of exercise. In some instances, these individuals can be exercised with caution and/or using low-level end points, especially if they are asymptomatic at rest.

[9] American College of Sports Medicine. ACSM's Guidelines for Exercise testing and Prescription, 9th edition. Lippincott Williams & Wilkins, Philadelphia, 2013.

Appendix G: Roles and Responsibilities of Referring Practitioners

Patient Recruitment	• To opportunistically recruit patients for ER • To recruit patients for ER from a disease register

Screen	• To establish the suitability of a patient for the scheme
	  ○ by assessing the patient's current physical activity status
	  ○ by assessing the patient's stage of exercise behaviour change
	  ○ by using the inclusion/exclusion guidelines coupled with clinical judgment

Intervene	• To provide reinforcement and encouragement to active patients to continue to be active
	• To offer brief advice to patients in the pre-contemplation stage of behaviour change
	• To explain the benefits and risks of physical activity in the context of the patient's overall care plan
	• For suitable patients:
	  ○ To explain the NERF scheme
	  ○ To afford the patient the opportunity to ask questions about the scheme and where possible, to provide answers
	  ○ To obtain the patient's agreement to be referred and informed consent to transfer relevant clinical information to the service provider
	  ○ To refer the patient to the most appropriate service within the NERF scheme
	  ○ To complete the required information on the exercise referral form and transfer relevant clinical information to the service provider relating to the patient's health and the implication of this for activities of daily living and, if known, for exercise
	  ○ To liaise with the ERU, in cases of uncertainty, to receive support and advice on referral criteria, procedures and suitability of programmes

Active Participation	• To provide support and encouragement to the patient to act upon the referral and adhere to the scheme • To transfer information about any relevant changes in the health of the patient to the service provider • To respond to enquiries about the patient from the service provider as expeditiously as possible
Review	• To discuss with the patient their progress and reinforce the benefits of long-term exercise adherence • To engage in communication with the patient's care team • To reassess the pre-contemplation patient's stage of behaviour change in 3-6 months or at the next available opportunity • To co-operate in processes of review and research

Appendix H: Examples of Evidence-ground Programmes

The following table identifies evidence-grounded programmes in Ireland. This list is not exhaustive.

NERF Centres	NERF Patient Accreditation Status
	Proposed categories below, this requires validation
MedEx Wellness Programmes, Dublin City University Croi Heart and Stroke Centre, Galway Primary Care Centres (e.g. Living Health Clinic, Mitchelstown)	A and B A and B A and B
Exercise Facilities	
Functional Zone at Leisureworld, Cork Appropriate existing community physiotherapy based programs Existing GP exercise referral facilities	A and B A and B B
Community Groups	
Green Steps Balance Matters Irish Cancer Society Physical Activity Programme Men on the Move Project weight loss programme (Cork LSP/ HSE/ Leisureworld) Siel blue Residential and Day Care Programmes Active 55 Groups GAA Healthy Club Bike for Life	B B B B B B B B B
Self-directed PA Programmes	
Go for Life DVD Slí na Sláinte	A and B (with remote monitoring) A and B (with remote monitoring)

Appendix I: Roles and Responsibilities of Service Providers

The roles and responsibilities of the service provider will vary slightly according to the setting of service provision and the participant category. The roles and responsibilities outlined below relate to the lead person (individual taking primary responsibility for NERF participants) within the PA opportunity setting.

Health & Safety	• To ensure health and safety requirements are appropriate for NERF participants • To ensure, where possible, the facility/programme is accessible for all • To inform the participants of any facility or programme protocols • To ensure staff and practices in the facility/programme meet the standards for exercise professionals • Service providers within high support centres or exercise facilities must certify the facility with industry quality assurance standards, e.g. Ireland Active White Flag, HIQA, or equivalent
Participant Acceptance	• To liaise with referring practitioners and the ERU to accept referrals • To enhance participant choice and aid decision making by adopting a transparent pricing policy • To check that the referral form contains all relevant information about the participant's health status and the appropriateness of the referral • To refer the participant back to the referring practitioner if the referral form is incomplete or the referral is inappropriate • To schedule the participants first consultation/visit in a timely manner following receipt of referral • To ensure the participant is adequately informed about the NERF scheme and their responsibilities whilst participating in the scheme
Pre-exercise Assessment	• To obtain participant informed consent to participate in a NERF pre-exercise assessment • To conduct a NERF protocol pre-exercise assessment • To explain the pre-exercise assessment results to the participant

Programme Delivery	To assist the participant in setting their PA goals and action plan as outlined within a NERF template and keep a copy of this on file ● To design/select a PA programme that matches the health status, risk stratification, needs and preferences of the participant ● Within the service providers capability and resources, to offer a broad range of appropriate PA opportunities, e.g. supervised group exercise classes, individual structured exercise sessions, graduated walking programmes, independent free living physical activity etc. ● To supervise the delivery of a safe and effective PA programme ● To provide support and encouragement to the participant throughout the programme ● To offer BA to participants not willing at this time to engage with the NERF
Monitor	● To monitor and record participant progress in accordance with NERF evaluation framework ● To communicate progress to the referring practitioner/ERU in accordance with feedback protocols ● To ensure appropriate informed consent and data handling procedures in line with HSE policies and procedures and meeting statutory requirements regarding data protection ● To provide on-going feedback to the participant on their progress ● To, where appropriate, adapt the participant's PA programme as their needs and preferences change ● To encourage the participant to keep a personal record of their physical activity, i.e. in the form of a log or diary ● To ensure that participant management systems are in place to monitor attendance ● To identify and follow-up programme drop outs by making contact twice within 4 weeks ● To decide in agreement with the participant the duration of service provision
Review	● To evaluate the programme in accordance with the NERF evaluation framework ● To provide relevant evaluation information to the NERF Manager/ERU in a timely manner in accordance with the scheme protocols ● To protect the confidentiality of participant information ● To ensure, where appropriate, participants are signposted to suitable exit strategies


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Health Service Executive
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Healthy Ireland
OÉ Gaillimh
NUI Galway
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